

network protocols and communications

Introduction to Networking and Security



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W0441213

Table of Contents

[Introduction: 2](#_Toc20580032)

[Chapter 3 Networking Protocols and Communications 3](#_Toc20580033)

[3.2.4.6 Investigating the TCP/IP and OSI Models in Action 3](#_Toc20580034)

[Questions 3](#_Toc20580035)

[Activity 3.2.4.6 Investigating the TCP/IP and OSI Models in action 6](#_Toc20580036)

[SCREENSHOT OF ACTIVITY 3.2.4.6 INVESTIGATING THE TCP/IP AND OSI MODELS IN ACTION 6](#_Toc20580037)

[Setting up Virtual Machine or VMware Workstation 7](#_Toc20580038)

[Windows 10v1809 Base 7](#_Toc20580039)

[SCREENSHOT OF VMWARE NETW1700-DESKTOP 8](#_Toc20580040)

[SCREENSHOT OF VMWARE NETW1700-LAPTOP 8](#_Toc20580041)

[SCREENSHOTS SHOWING BOTH NODES 9](#_Toc20580042)

[SCREENSHOT OF VMWARE NODES IN NETW1700-DESKTOP 9](#_Toc20580043)

[SCREENSHOT OF VMWARE NODES IN NETW1700-LAPTOP 9](#_Toc20580044)

[MAPPED NETWORK DRIVE 10](#_Toc20580045)

[SCREENSHOT OF MAPPED NETWORK DRIVE 10](#_Toc20580046)

[WIRESHARK 11](#_Toc20580047)

[SCREENSHOT OF WIRESHARK 11](#_Toc20580048)

[Mnemonics for ISO model 12](#_Toc20580049)

[Activity 3 – Sarah’s SOHO network 13](#_Toc20580050)

[SCREENSHOT OF SARAH’S SOHO NETWORK 13](#_Toc20580051)

[SCREENSHOT OF SARAH’S SOHO NETWORK 13](#_Toc20580052)

[SCREENSHOT OF SARAH’S SOHO NETWORK – FILE TRANSFER COMPLETED 14](#_Toc20580053)

[Works Cited 15](#_Toc20580054)

[Appendix 16](#_Toc20580055)

[Appendix A – Cisco Commands Tool Kit 16](#_Toc20580056)

# Introduction:

This assignment contains activities that used learnings from Chapters 1-3 of Cisco’s CCNA R&S: Introduction to Networking. It also contains an activity wherein VMware and Wireshark are used for the first time. This assignment also contains the continuation of the case study from the previous assignments, with this one being Sarah’s SOHO Network. The mentioned case study focuses on the knowledge and skills that are required in order to successfully setup a peer-to-peer network between two computers. This assignment also contains the mnemonics to help remember the different OSI Layers, as well as, a tool kit for the Cisco commands.

# Chapter 3 Networking Protocols and Communications

## 3.2.4.6 Investigating the TCP/IP and OSI Models in Action

### Questions

Part 1. Step 2. D. Look at the Web Client web browser page. Did anything change?

* Yes, the web browser page shows that I have successfully accessed the home page for Web Server.

Step 3. B. What is the text displayed next to the **Layer 7** label?

* The text displayed next to the Layer 7 label is nothing.

What information is listed in the numbered steps directly below the **In Layers** and **Out Layers** boxes?

* The information listed shows what is happening in the specific layer. In this layer (layer 7) it displays “The HTTP client sends a HTTP request to the server.”

C. Click **Next Layer**. Layer 4 should be highlighted. What is the **Dst Port** value?

- The Dst Port value is 80.

D. Click **Next Layer**. Layer 3 should be highlighted. What is the **Dest. IP** value?

- The Dest. IP value is 192.168.1.254

E. Click **Next Layer**. What information is displayed at this layer?

- This layer shows the layer 2 ethernet II header, and inbound and outbound MAC addresses.

F. What is the common information listed under the **IP**section of **PDU Details**as

compared to the information listed under the **OSI Model**tab? With which layer is it

associated?

* They both show the source IP and the destination IP. The IP section is associated in Layer 3 of the OSI Model.

What is the common information listed under the **TCP**section of **PDU Details**,as compared to the information listed under the **OSI Model**tab, and with which layer is it associated?

* They both show the source port and the destination port. The TCP section is associated to Layer 4 of the OSI Model.

What is the **Host** listed under the **HTTP**section of the **PDU Details**? What layer would this information be associated with under the **OSI Model**tab?

* The host listed under the HTTP section of the PDU details is [**www.osi.local**](http://www.osi.local). This section would be associated with Layer 7 in the OSI Model.

H. Comparing the information displayed in the **In Layers** column with that of the **Out Layers** column, what are the major differences?

- The destination port in the In Layers column is the source port of the Out Layers column, and the source port in the In Layers column is the destination port of the Out Layers column. *(Layer 4)*

- The destination IP in the In Layers column is the source IP of the Out Layers column, and the source IP in the In Layers column is the Destination IP of the Out Layers column. *(Layer 3)*

- The destination address in the In Layers column is the source address of the Out Layers column, and the source address in the In Layers column is the Destination address of the Out Layers column. *(Layer 2)*

I. What is the first line in the HTTP message that displays?

- It shows HTTP Data: Connection: close

J. Click the last colored square box under the **Info** column. How many tabs are displayed with this event and why?

- It only shows 2 tabs, the OSI Model and the Inbound PPU details. It only shows these two because this is the receiving device, which is also why the Out Layers column is grayed out as well.

Part 2. Step 1. B. What additional Event Types are displayed?

* Adding to HTTP, the DNS, ARP, and TCP are also displayed.

D. Click the **Outbound PDU Details**tab. What information is listed in the**NAME**: in the DNS QUERY section?

- The name listed in the DNS query section is [**www.osi.local**](http://www.osi.local)

E.   Click the last DNS **Info** colored square box in the event list. Which device is displayed?

- It displays the Web Client device.

What is the value listed next to **ADDRESS**: in the DNS ANSWER section of the **Inbound PDU Details**?

* It shows the IP address of the web server: 198.168.1.254

F. What is the information displayed under items 4 and 5?

- It says that the TCP connection is successful and that the communication channel has been established.

**G. What is the purpose of this event, based on the information provided in the last item in the list (should be item 4)?**

- Closing the connection. It is waiting for the remote TCP to acknowledge the connection termination request. It sends out a message that the previously sent message was received and sends a message that it wants to terminate the connection. It breaks down the message in the last item in the list.

**CHALLENGE**

Based on the information that was inspected during the Packet Tracer capture, what port number is the **Web Server** listening on for the web request?

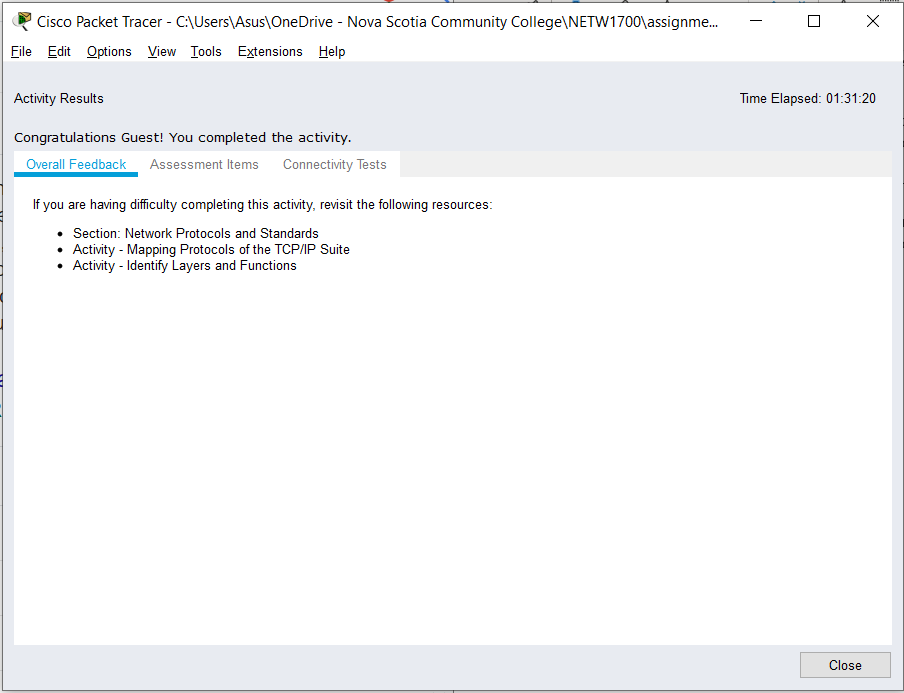
* Port 80 as shown in layer 4 of the first HTTP PDU request by the Web Client.

(showing as a destination port)

What port is the **Web Server** listening on for a DNS request?

* Port 53 as shown in layer 4 in the first DNS PDU request by the Web Client. (showing as a destination port)

## Activity 3.2.4.6 Investigating the TCP/IP and OSI Models in action



### SCREENSHOT OF ACTIVITY 3.2.4.6 INVESTIGATING THE TCP/IP AND OSI MODELS IN ACTION

# Setting up Virtual Machine or VMware Workstation

## Windows 10v1809 Base

**Description:**

Windows 10 Pro v 1809

Updated: Sept 19, 2019

Created by: Marie Dutka

Installed with: KMS Key

**IP set to DHCP**

Hostname = CL01D31101

Username = Student

Administrator Password = Passw0rd

**Memory** 4 GB

**Processors** 2

**Hard Disk (SCSI)** 80 GB

**CD/DVD (SATA)** Auto detect

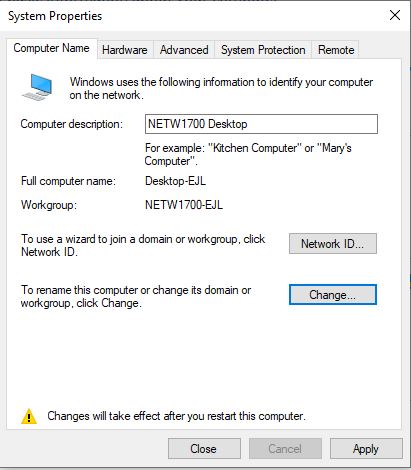
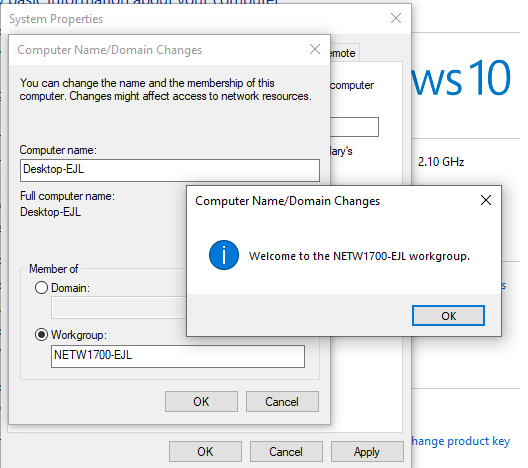
**Network Adapter** NAT

**USB Controller** Present

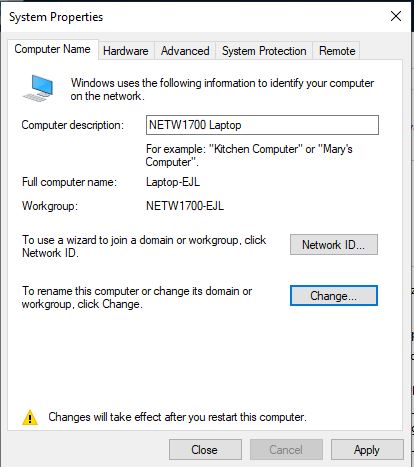
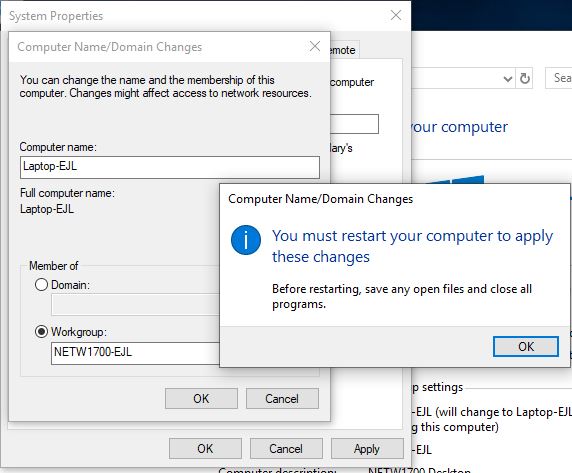
**Sound Card** Auto detect

**Printer** Present

**Display**  Auto detect

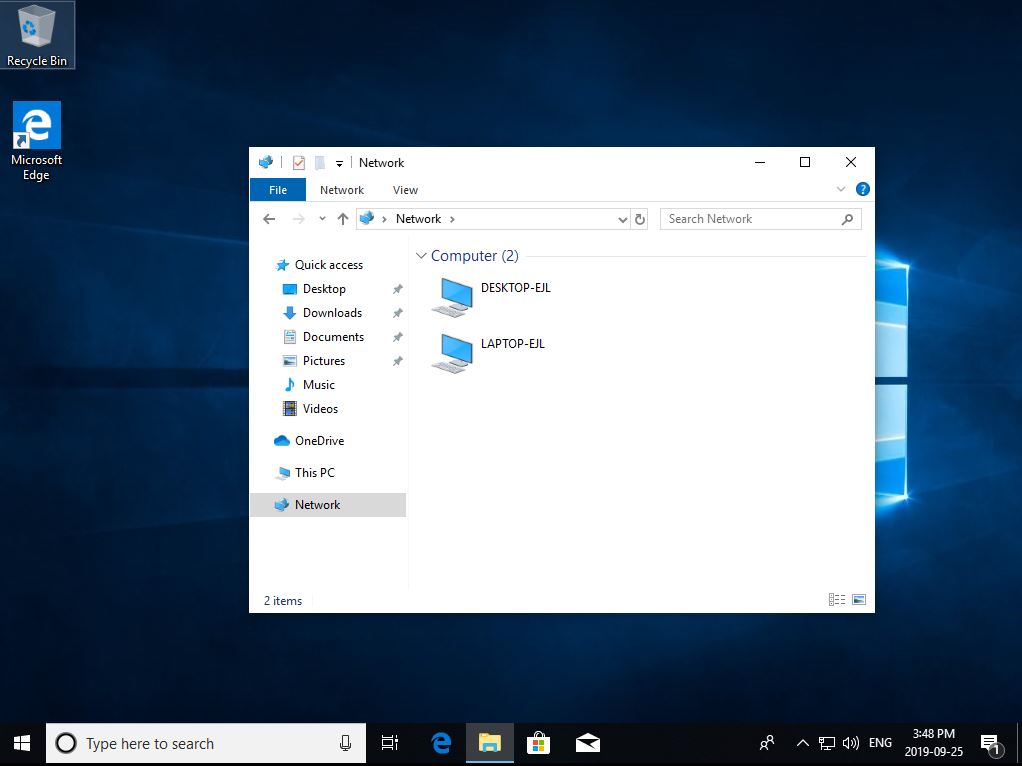


### SCREENSHOT OF VMWARE NETW1700-DESKTOP

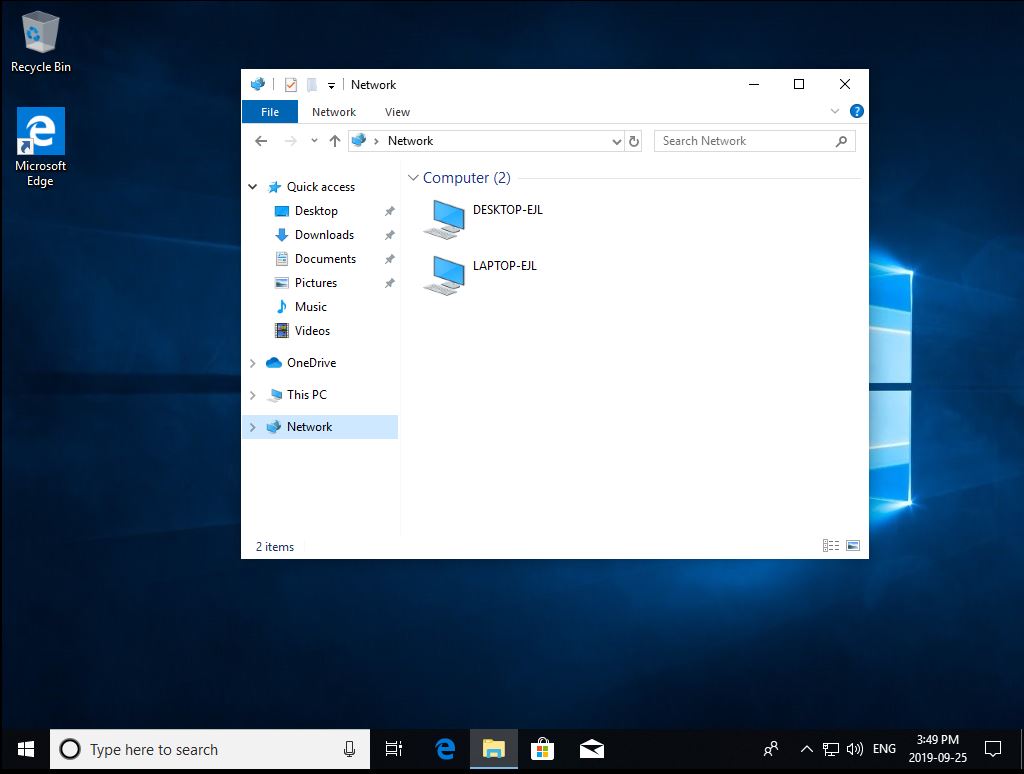
****

### SCREENSHOT OF VMWARE NETW1700-LAPTOP

## SCREENSHOTS SHOWING BOTH NODES

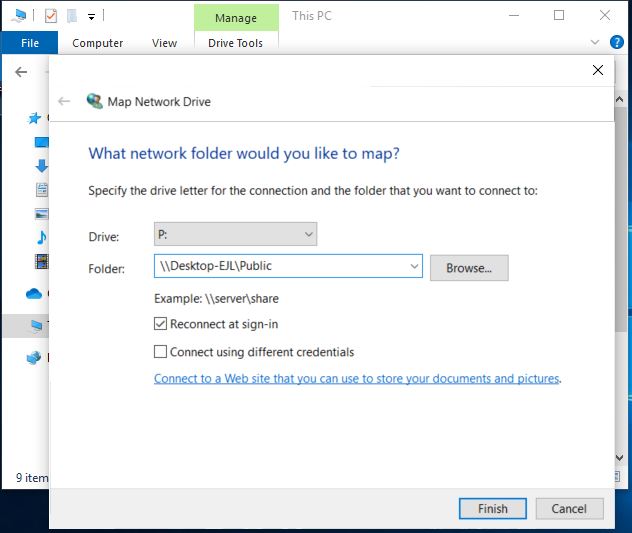
****

### SCREENSHOT OF VMWARE NODES IN NETW1700-DESKTOP



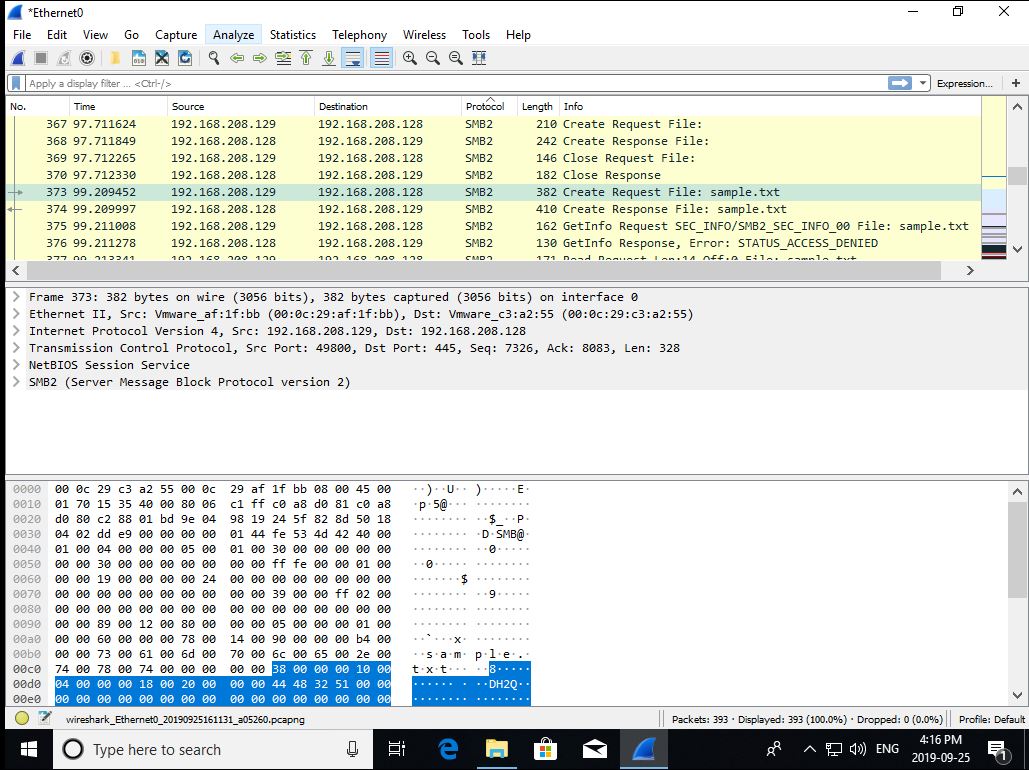
### SCREENSHOT OF VMWARE NODES IN NETW1700-LAPTOP

## MAPPED NETWORK DRIVE



## SCREENSHOT OF MAPPED NETWORK DRIVE

## WIRESHARK



### SCREENSHOT OF WIRESHARK

# Mnemonics for ISO model[[1]](#footnote-1)

**P**leasing

**D**ogs

**N**ever

**T**ear

**S**hoes

**P**lus

**A**ppliances

**A**mazing

**P**eople

**S**hare

**T**alents

**N**ot

**D**ull

**P**ersonalities

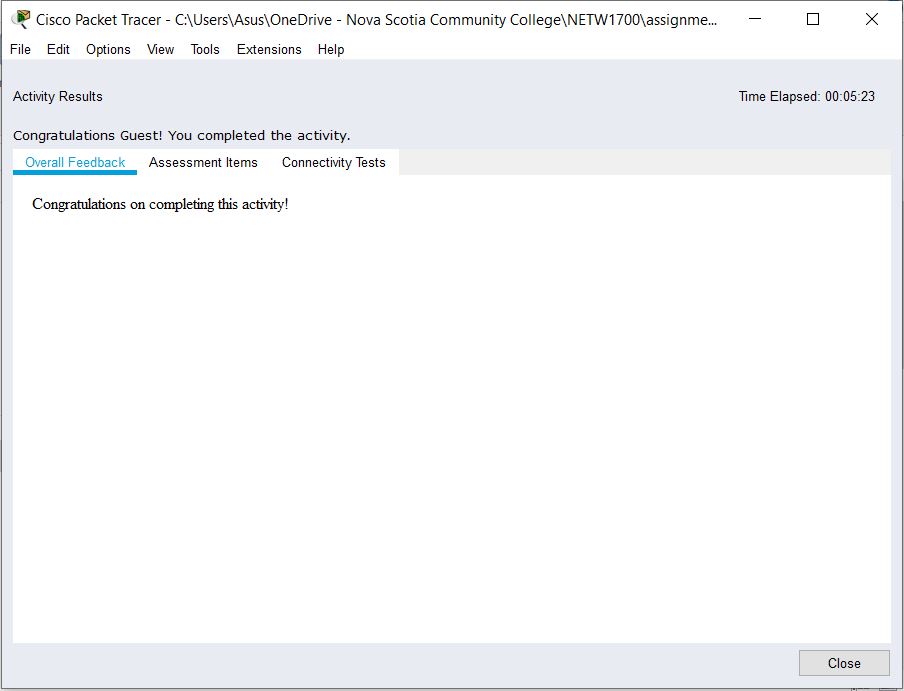
**A**pplication Layer → **P**resentation Layer → **S**ession Layer → **T**ransport Layer → **N**etwork Layer →

**D**ata Link Layer → **P**hysical Layer

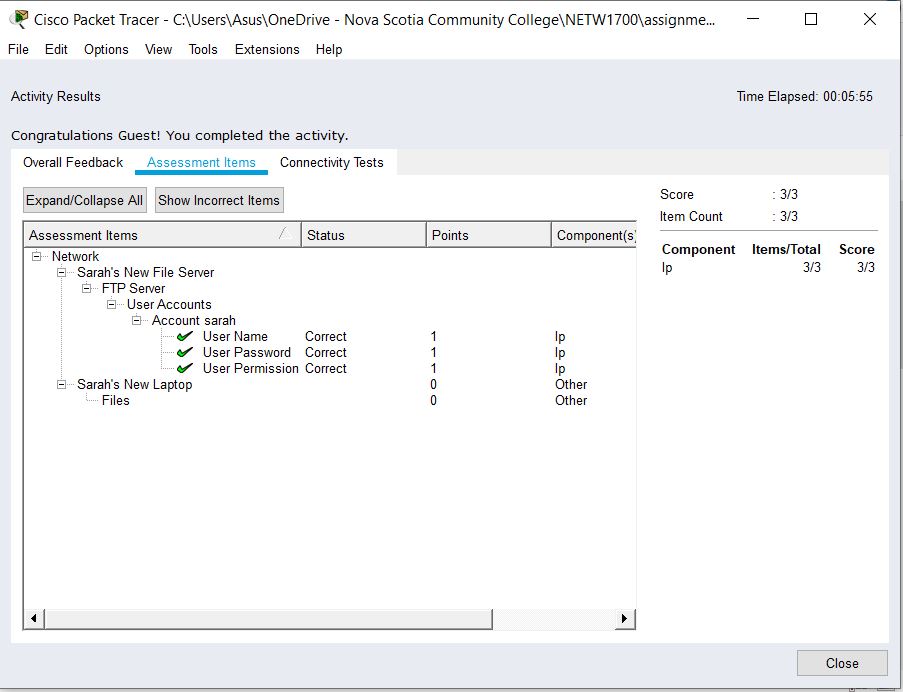
**P**hysical Layer → **D**ata Link Layer → **N**etwork Layer → **T**ransport Layer → **S**ession Layer →

**P**resentation Layer → **A**pplication Layer

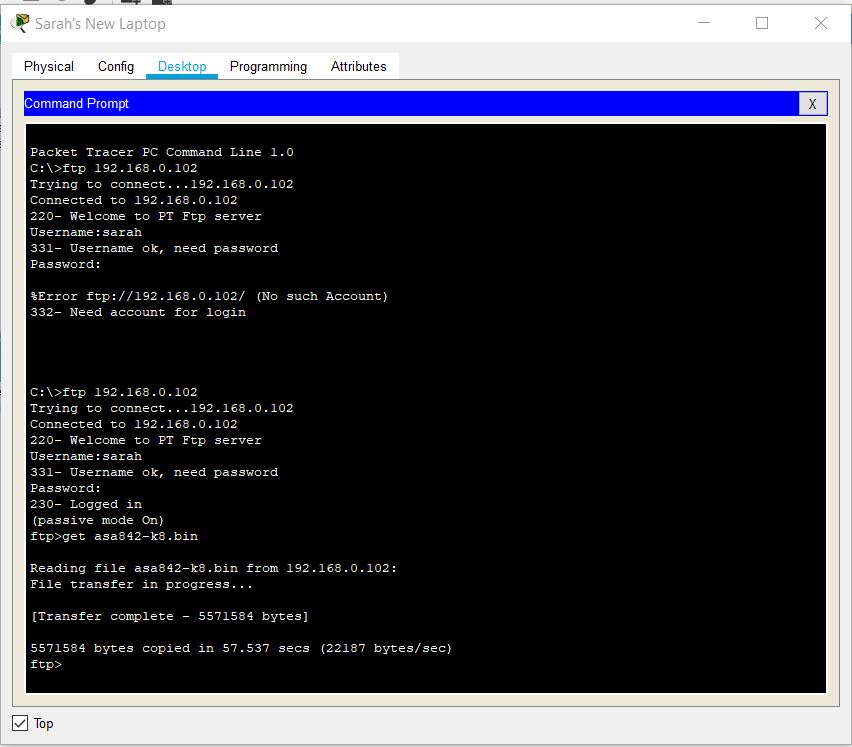
# Activity 3 – Sarah’s SOHO network



### SCREENSHOT OF SARAH’S SOHO NETWORK



### SCREENSHOT OF SARAH’S SOHO NETWORK



### SCREENSHOT OF SARAH’S SOHO NETWORK – FILE TRANSFER COMPLETED

# Works Cited

Cisco Networking Academy. (n.d.). *Introduction to Networks, Chapter 2: Configure a Network Operating System*. Retrieved September 27, 2019, from Cisco Networking Academy: https://static-course-assets.s3.amazonaws.com/ITN6/en/index.html#2

Davis, D., & Carroll, B. (2008, June 12). *10 commands you should master when working with the Cisco IOS*. Retrieved from TechRepublic: https://www.techrepublic.com/blog/data-center/10-commands-you-should-master-when-working-with-the-cisco-ios-104071/

# Appendix

## Appendix A – Cisco Commands Tool Kit[[2]](#footnote-2)

**?** – this command will show the list of all the commands available for the specific mode you are currently in.

**(characters) ?** – this command is known as context-sensitive help. it will show the available commands in the current mode with the specific first characters you have entered. (example: **te?** in the user exec mode will show **te**lnet and **te**rminal, both starting with **te**.)

**banner motd “ ”** – this command will configure the message-of-the-day banner that will display when a user logs in to the switch.

**clock set (time and date)** – this command will allow you to set the time and date. (example: **clock set 15:00:00 july 11 2019)**

**copy running-config startup-config** – this command will save the running configuration to the startup configuration.

**config terminal** – this command will open the global configuration mode.

**enable** – this command will open the privileged exec mode and will give additional commands.

**enable password** – this command followed by a password will set that same password for the privileged exec mode.

**enable secret** – this command followed by a password will set an ***encrypted*** password for the privileged exec mode.

**exit** – this command will exit the current mode.

**hostname** – this command followed by the name you want the hostname to be will change the hostname to what you want it to be.

**interface** – followed by the interface you want to configure will open that specific interface’s configuration mode.

**interface vlan <1-4094>**– you can use this command to configure an svi on a switch.

**ip address ­**– this command followed by the ip address and subnet mask you want will set the ip address and subnet mask to the entered values.

**line** – this command will configure a terminal line.

**line console 0** – this command will open the line console configuration mode.

**line vty 0 15** – this command will open the virtual terminal configuration mode.

**login** – this command will enable password checking

**no shutdown** – this command enables an interface.

**password** – this command will set a password.

**ping** – this command will send a request to the destination and wait for the response. this is good for checking network connectivity.

**service password-encryption** – this command in the global config mode will encrypt all unencrypted passwords in the configuration file.

**show interface** – this command will display the status of the interfaces.

**show ip interface** – this command will display the configuration and status of the ip protocol.

**show running-config** – this command will show all the running configuration file.

**show startup-config** – this command will show all the startup configuration file.

**show clock** – this command will show the time and date.

***show?*** – this command would show all the show commands in the specific mode you are currently in.

1. (Cisco Networking Academy, n.d.) [↑](#footnote-ref-1)
2. References and sources from (Cisco Networking Academy, n.d.) and (Davis & Carroll, 2008). [↑](#footnote-ref-2)