

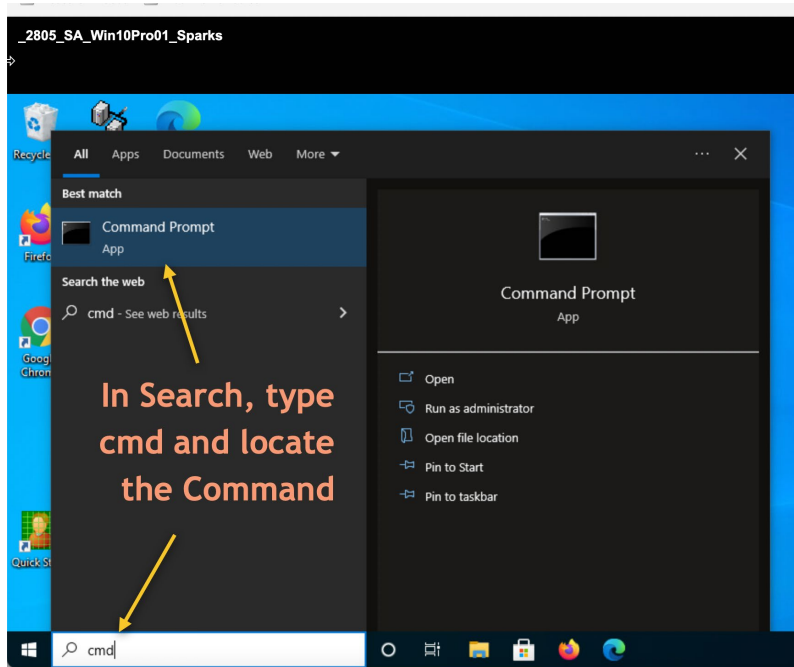
## Command Line Lab

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### Background:

Many tools used by network administrators to manage a network are also used in cybersecurity by the team charged to protect the network as well as attackers who are attempting to gain access to the network. This lab is designed to introduce the typical command line tools used in cybersecurity to discover information about a network.

Open a browser and navigate to <https://infoadc.mccinfo.net>. Log into the VM Environment using your MCC credentials and navigate to the VM you have been assigned by your instructor. Log into the VM as admin using the password of Password1. As shown in the graphic, after logging in, open a command line and complete the following parts.



Part 1: ipconfig is used by administrators to discover information about the network interface of a computer system.

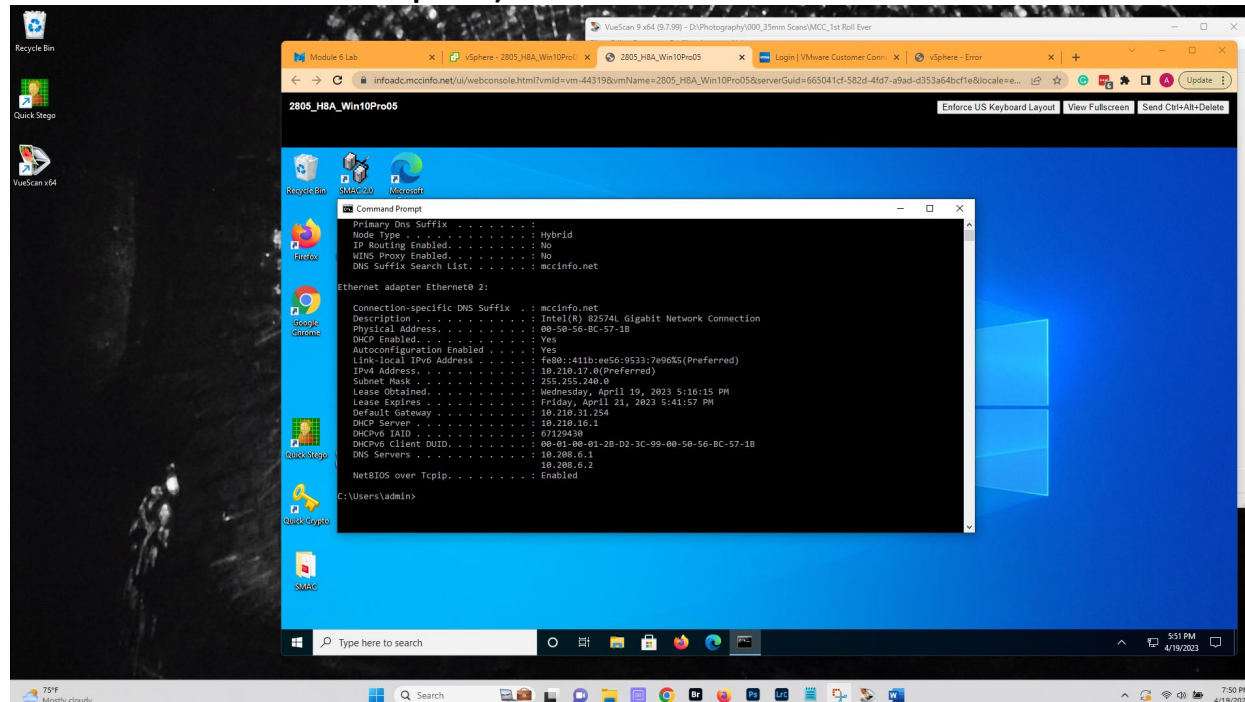
1. In the command line, type ipconfig with no parameters.
    - a. What information does this display?
      - i. Retrieves Basic TCP/IP Network Information (IP, subnet mask, gateway)
- Windows Ip Configuration  
Ethernet adapter Ethernet0 2:  
Connection-specific DNS Suffix . : mccinfo.net  
Link-local IPv6 Address.....: fe80::411b:ee56:9533:7e96%5  
IPv4 Address.....: 10.210.17.0

## Command Line Lab

Subnet Mask.....: 255.255.240.0

Default Gateway.....: 10.210.31.254

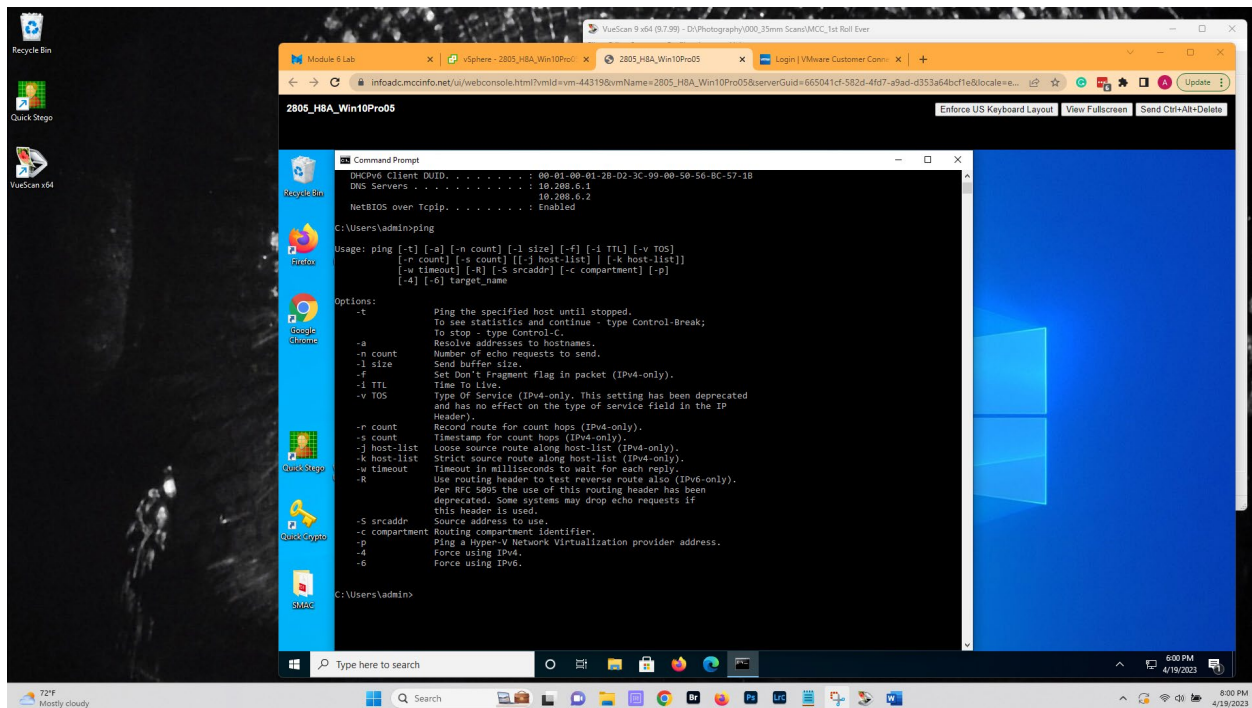
2. Type `cls` to clear the screen. Type `"ipconfig /all"` and press enter.
  - a. How does the output change?
    - i. Retrieves All TCP/IP Network Information (MAC address, adapter description, DHCP details)
  - b. What does it mean if the DHCP is set to yes?
    - i. Yes means the device receives its IP address configuration from a DHCP server
  - c. What is the subnet mask?
    - i. 255.255.240.0
  - d. What is your computer's IP address?
    - i. 10.210.17.0(preferred)
  - e. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**



## Command Line Lab

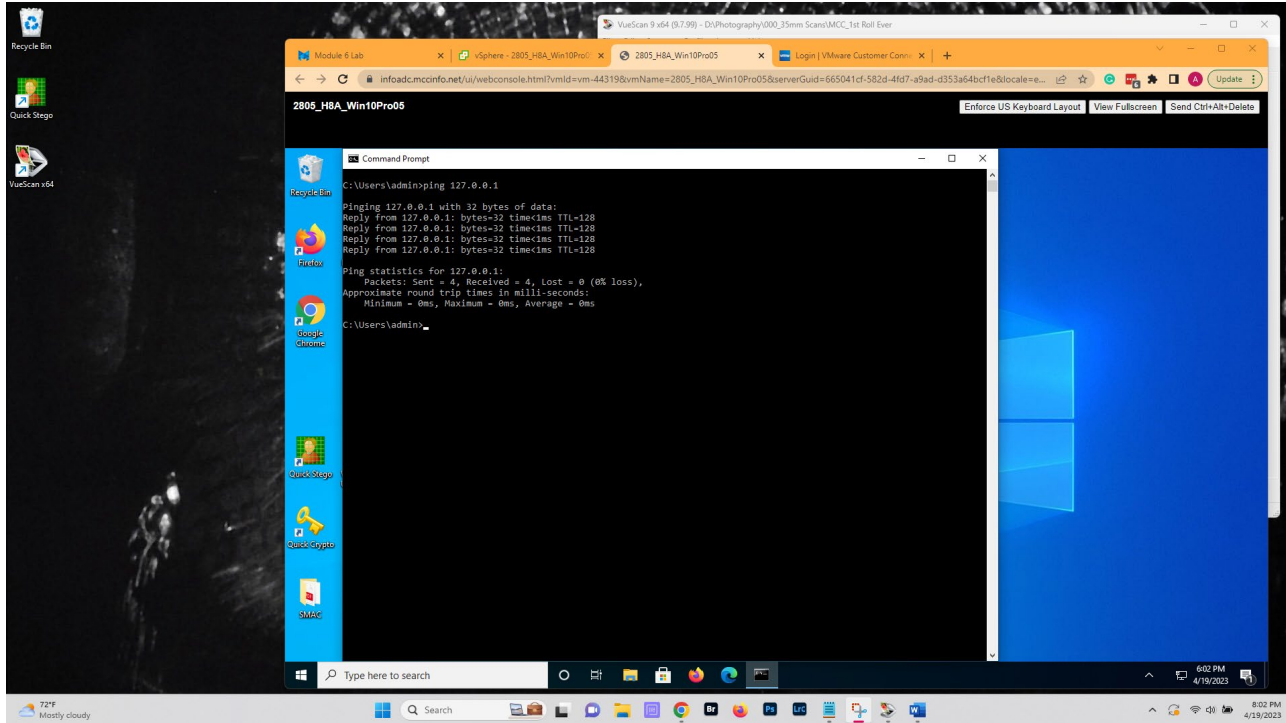
Part 2: The PING (Packet Internet Groper) is a command used to determine if a computer or network device is online and communicating.

1. In the command line type the command ping with no parameters. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**



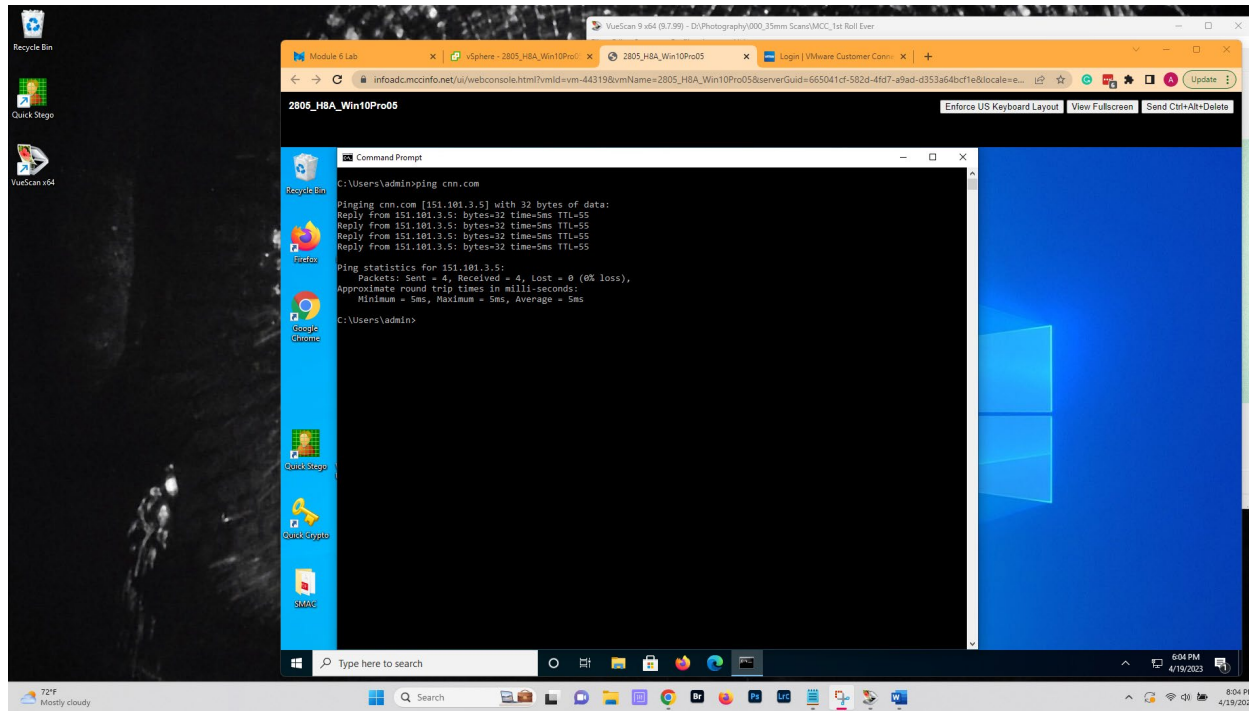
2. Type `cls` in the command line to clear the screen. Then, type the following command: `ping 127.0.0.1`. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

## Command Line Lab



3. Type `cls` to clear the screen. Type `ping cnn.com` and press enter.
  - a. What are the IP addresses listed?
    - i. 151.101.3.5
  - b. What does the information returned tell you?
    - i. This tells me the connectivity to `cnn.com` is 5ms after testing it 4 times and averaging the connectivity time out
  - c. **Copy and paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

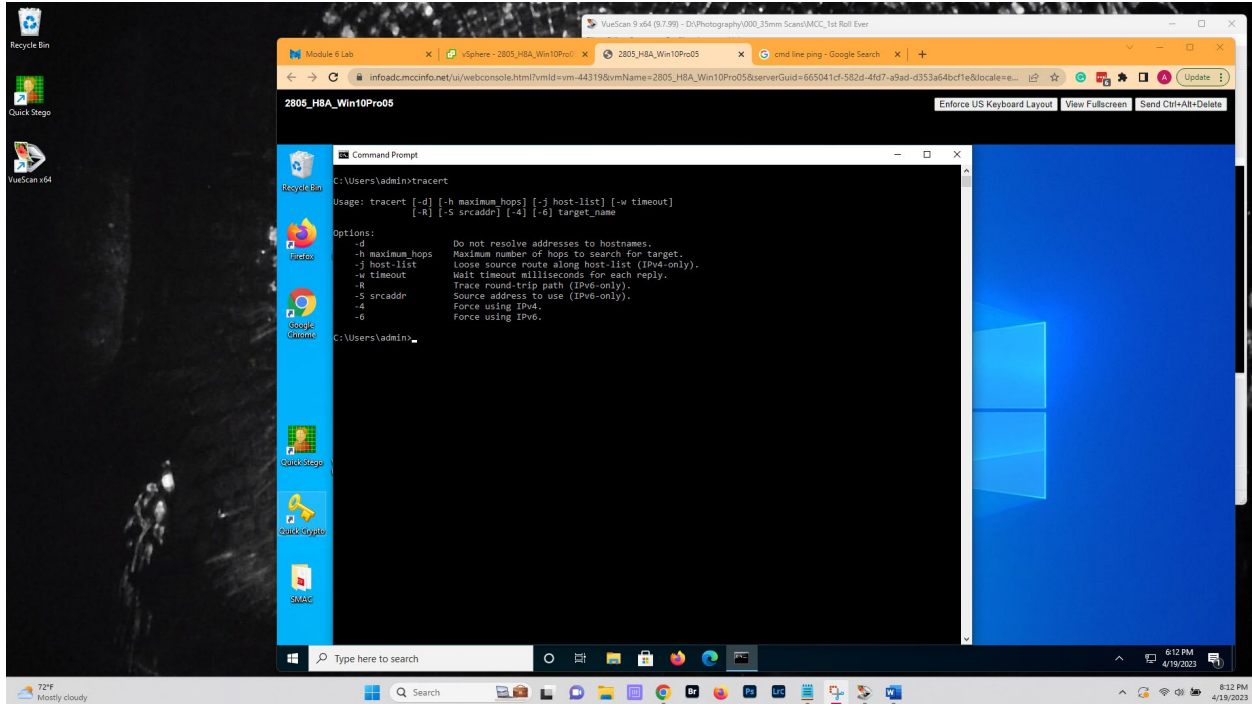
## Command Line Lab



Part 3: Tracert is a command used to determine the path data takes between two points. From a cybersecurity standpoint, an attacker can discover what routers or Layer 3 Switches the data travels through.

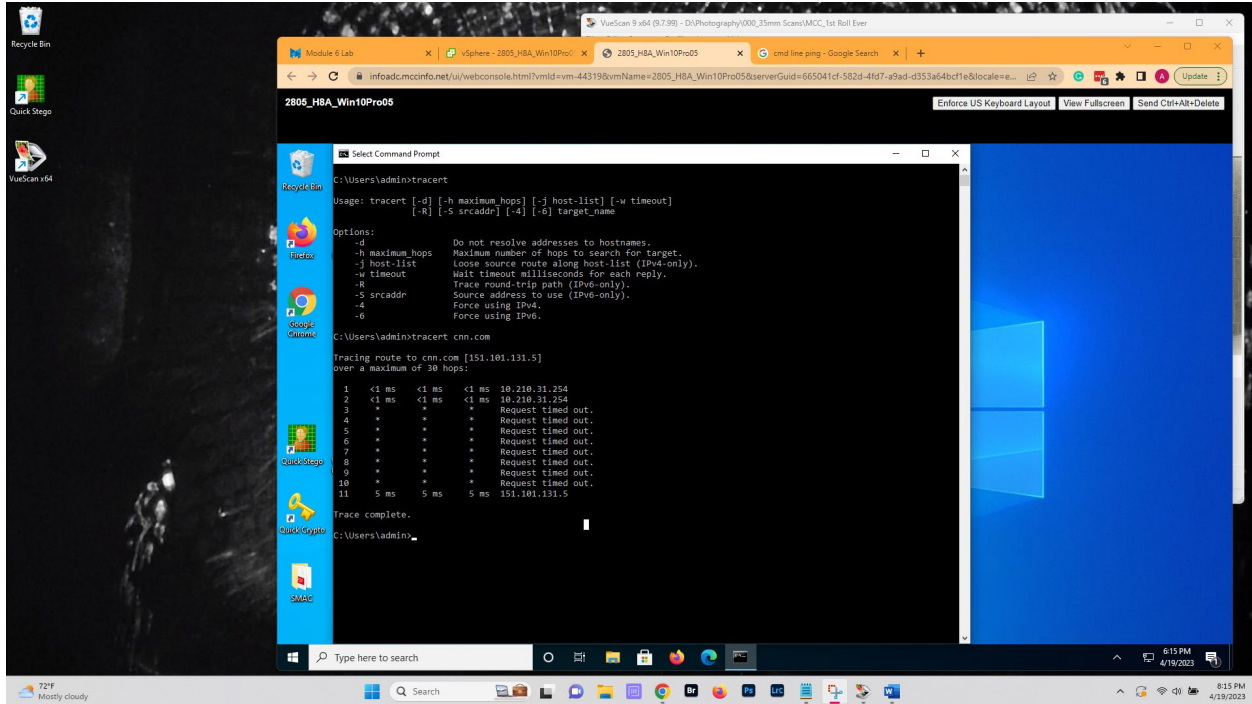
1. Type `cls` to clear the screen. Type `tracert` with no parameters. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

## Command Line Lab



2. Type `cls` to clear the screen. Type `tracert cnn.com` and press enter.
  - a. What are the public IP addresses?
    - i. 151.101.131.5
  - b. What are the private IP addresses?
    - i. 10.210.31.254
  - c. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

## Command Line Lab

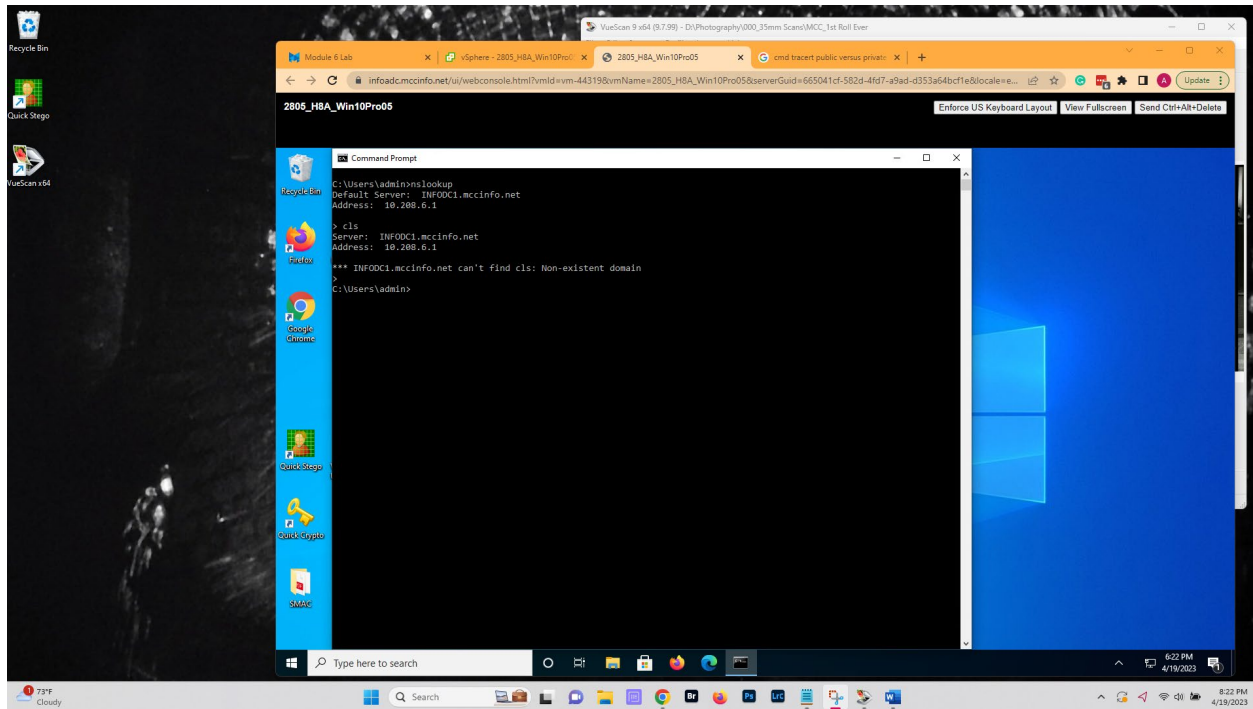


Part 4: NSlookup is another command used to lookup DNS (Domain Name System) information such as IP address.

Cls

1. Type cls to clear the screen. Type nslookup with no parameters.
  - a. What is your default server? Use the fully qualified domain name. Press Ctrl+C to break the command execution.
    - i. INFODC1.mccinfo.net
  - b. What is the IP address?
    - i. 10.208.61
  - c. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

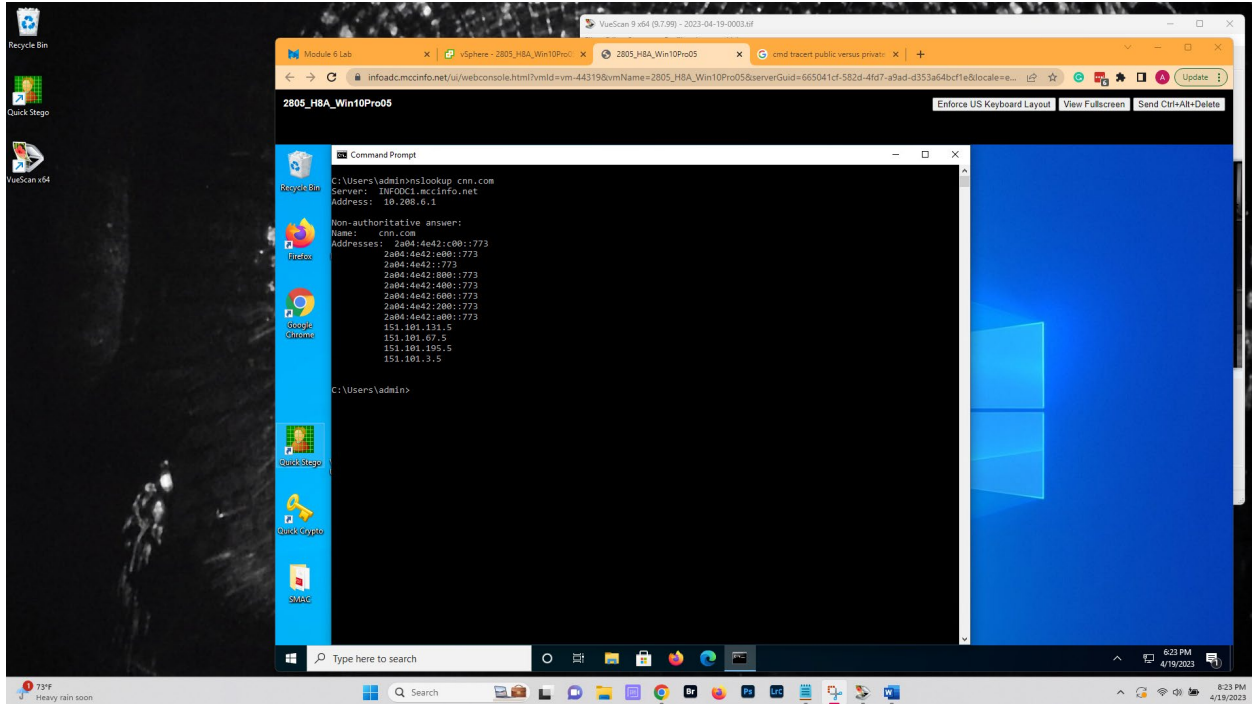
## Command Line Lab



2. Type `cls` to clear the screen. Type `"nslookup cnn.com"` and press enter.
  - a. How many IP addresses do they have assigned?
    - i. 12
  - b. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**



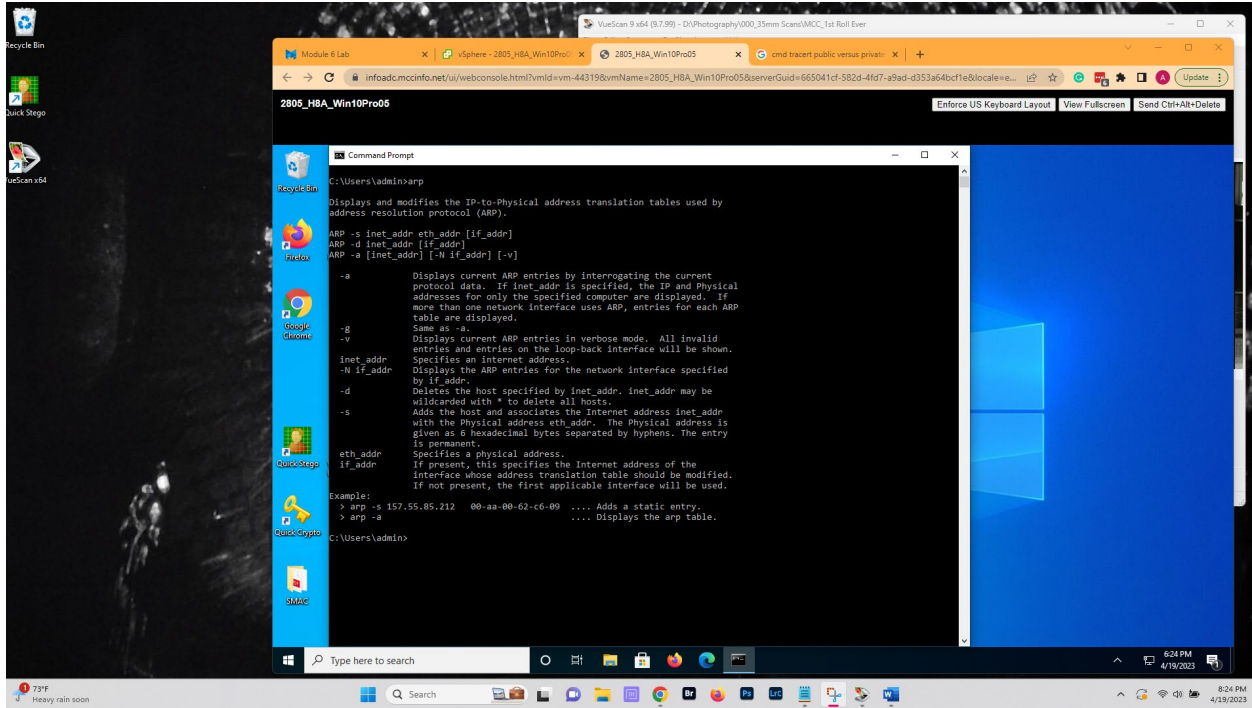
## Command Line Lab



Part 5: ARP (Address Resolution Protocol) is used to displays the ARP table that shows the MAC (Media Access Control) address mapped to the IP address. Additionally, it can show if the address is assigned dynamically or static.

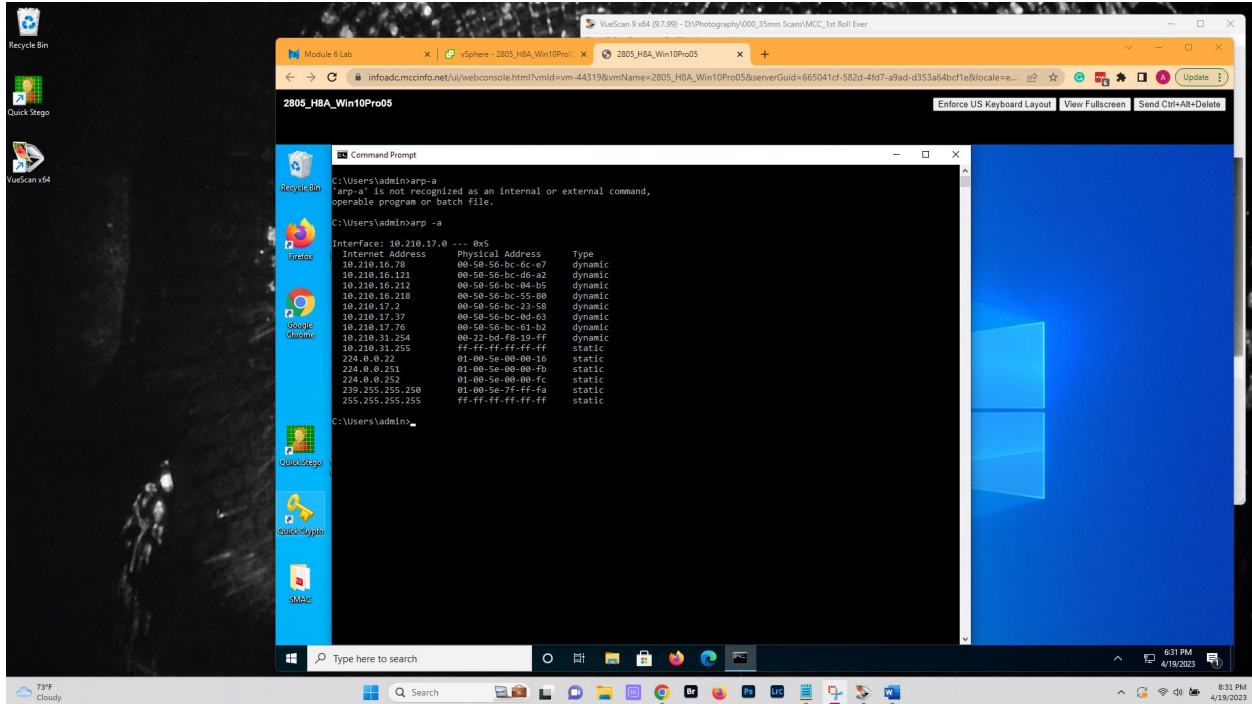
1. Type `cls` to clear the screen. Type `arp` with no parameters and press enter. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

## Command Line Lab



2. Type `cls` to clear the screen. Type "`arp -a`" and press enter.
  - a. What are the columns used?
    - i. Internet Address, Physical Address, Type
  - b. What is meant by the physical address?
    - i. The MAC address is the physical address that identifies each device on a network using 12 hexadecimal digits used for global identification.
  - c. What does it mean on the type as dynamic and static?
    - i. Static addresses are manually configured and do not age out. The device creates dynamic addresses from the ARP packets it receives. Dynamic addresses age out after a configured time.
  - d. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

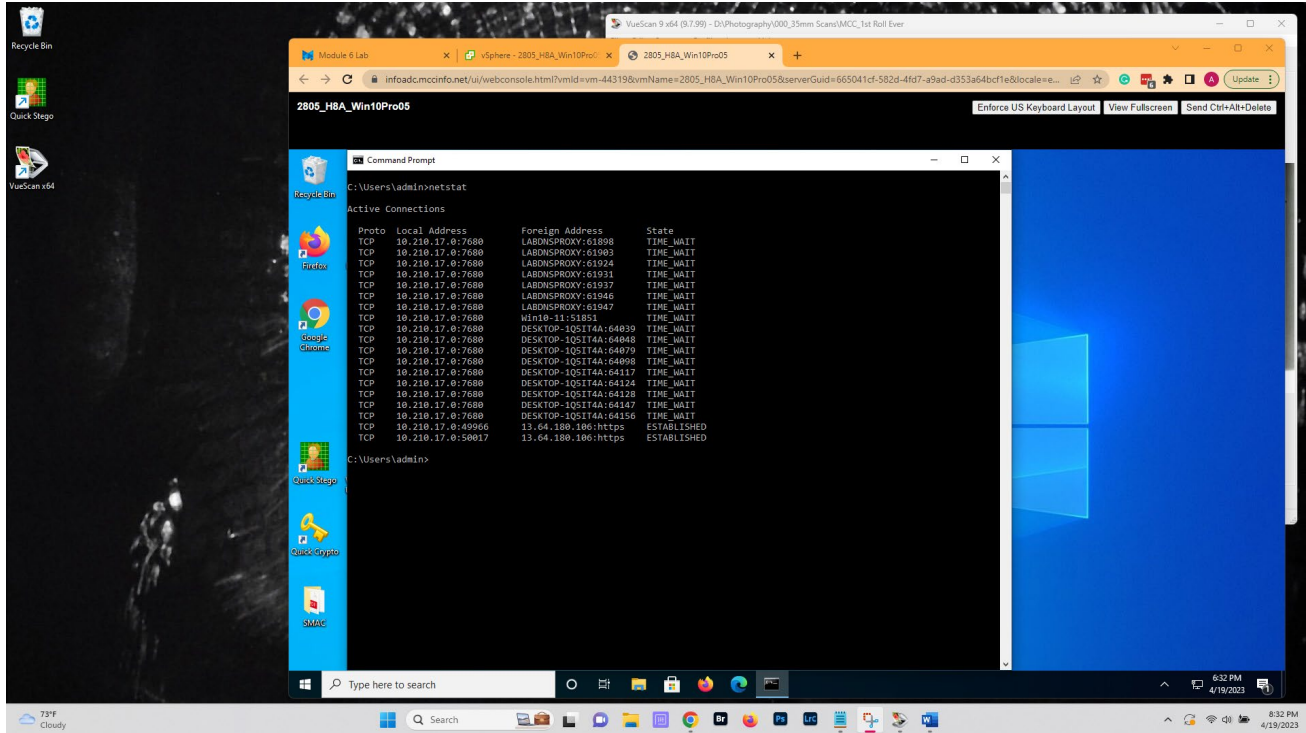
## Command Line Lab



Part 6: Netstat is used to display connections on protocols at Layer 4 of the OSI (Open Systems Interconnection) model.

1. Type `cls` to clear the screen. Type `netstat` with no parameters.
  - a. How many connections are displayed?
    - i. 19
  - b. What protocol is displayed?
    - i. TCP
  - c. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

## Command Line Lab



2. Type `cls` to clear the screen. Type `netstat -a` and press enter.
  - a. How does the output change?
    - i. Netstat -a displays all TCP connections including LISTENING and also UDP ports
  - b. What protocols are displayed?
    - i. TCP & UDP
  - c. What are the two protocols used for?
    - i. TCP is a connection-oriented protocol and UDP is a connectionless protocol. UDP is used for time-sensitive applications like DNS lookups, games, videos. TCP is for non-time sensitive data transmissions like FTP & SSH
  - d. **Copy and Paste a capture of the screen below this line (NOTE: your machine name must be visible in the capture.)**

# Command Line Lab

The screenshot displays a Windows 10 desktop environment. A Command Prompt window is open, showing the output of the command `netstat -a`. The output lists active connections for various protocols (TCP and UDP) across different local and foreign addresses. The desktop background is a dark image of a person in a trench coat. The taskbar shows various application icons and the system tray displays the time as 8:42 PM on 4/19/2023.

```
C:\Users\admin>netstat -a

Active Connections

Proto Local Address           Foreign Address         State
TCP    0.0.0.0:135              DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:445              DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:59840            DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:7680             DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:49664            DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:49665            DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:49666            DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:49667            DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:49668            DESKTOP-1Q5T4A:0       LISTENING
TCP    0.0.0.0:49669            DESKTOP-1Q5T4A:0       LISTENING
TCP    10.210.17.0:135          DESKTOP-1Q5T4A:0       LISTENING
TCP    10.210.17.0:7680        DESKTOP-1Q5T4A:0       LISTENING
TCP    10.210.17.0:7680        Win10-11:51852         TIME_WAIT
TCP    10.210.17.0:7680        Win10-11:51852         TIME_WAIT
TCP    10.210.17.0:7680        DESKTOP-1Q5T4A:64117   TIME_WAIT
TCP    10.210.17.0:7680        DESKTOP-1Q5T4A:64124   TIME_WAIT
TCP    10.210.17.0:7680        DESKTOP-1Q5T4A:64128   TIME_WAIT
TCP    10.210.17.0:7680        DESKTOP-1Q5T4A:64147   TIME_WAIT
TCP    10.210.17.0:7680        DESKTOP-1Q5T4A:64156   TIME_WAIT
TCP    10.210.17.0:49966       13.64.180.106:https    ESTABLISHED
TCP    10.210.17.0:50017       13.64.180.106:https    ESTABLISHED
TCP    [::]:135                DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:445                 DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:7680                DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:49664               DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:49665               DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:49666               DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:49667               DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:49668               DESKTOP-1Q5T4A:0       LISTENING
TCP    [::]:49669               DESKTOP-1Q5T4A:0       LISTENING
UDP    0.0.0.0:135              *:*
UDP    0.0.0.0:5850             *:*
UDP    0.0.0.0:13353            *:*
UDP    0.0.0.0:53555            *:*
UDP    10.210.17.0:137          *:*
UDP    10.210.17.0:138          *:*
UDP    10.210.17.0:13900        *:*
UDP    10.210.17.0:60749        *:*
UDP    127.0.0.1:11900          *:*
UDP    127.0.0.1:11901          *:*
UDP    127.0.0.1:60750         *:*
```