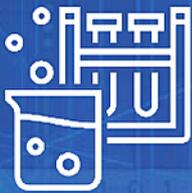


# Lab Assignment



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Cybersecurity Professional Program  
Computer Networking

## Introduction to Networks

**NET-01-L1**  
**Local Network  
Configuration**

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## Lab Objective

Learn about and practice using CLI networking commands in Windows.

## Lab Mission

Configure a local network using CMD-based commands.

## Lab Duration

15-30 minutes

## Requirements

- Familiarity with the Windows command line.
- Familiarity with the **nslookup** tool.

## Resources

- Environment & Tools
  - Windows 7, 8, or 10
  - Internet connection

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## **Lab Task 1: Windows 10 Virtual Machine Installation**

If you do not have a Windows 10 VM installed, set up a new machine.

You can follow the instructions in the Windows 10 Installation Guide located in the Installation Guide module in your Canvas course.

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## Lab Task 2: Local Network Configuration

In this task, you will use commands to view and document the local network configuration of a Windows machine.

- 1 Open CMD on the local machine.
- 2 Run the **ipconfig** command to display local PC network settings.
- 3 According to the ipconfig command output, how many network cards are there? Why do some PCs display information regarding more than one network card?
- 4 Document the information in Notepad or a personal notebook.
- 5 The command in Step 2 above does not show the physical and DNS address. Issue the same command with the appropriate option to display the network settings in more detail.
- 6 Which Help option displays all ipconfig option combinations and their purposes?
- 7 Which CMD command displays the physical address?
- 8 Run the **cls** command to clear the screen.

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## Lab Task 3: Test Connectivity

In this task, we will verify connectivity to an internet based IP, and document connection metrics such as latency and path.

- 1** Using the Ping command, verify connectivity between the local PC and another PC in the same network (for example, the PC of an adjacent student or another device on your network).
- 2** Document the following details located in the ping statistics:
  - Packets sent, received, and lost.
  - Average round trip time.
- 3** Run tracert for the same target as in Step 1 above.
- 4** What is a Hop?
- 5** Document the number of hops.
- 6** Use the ping command again to test connectivity to an external source (such as a website or Google DNS public server, 8.8.8.8).
- 7** Document the following details in the ping statistics:
  - Packets sent, received, and lost.
  - Average round trip time (latency as ms).
- 8** Run tracert for the same target as in Step 7 above.
- 9** Document the number of hops.
- 10** Compare the findings. Why are the round-trip times and hop count results in Steps 1-4 less than those in Steps 7-10?

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## Lab Task 4: Domain Names and IPs

In this task, you will demonstrate knowledge of the **nslookup** command, document your machine's DNS servers, and find IP addresses of URLs.

- 1** Using the **nslookup** command, discover which DNS server is configured on the local machine.
- 2** Using **nslookup**, what is the public IP address of [www.cisco.com](http://www.cisco.com)?
- 3** A DNS record can also work in reverse order. Which service or organization uses IP address 185.60.216.35?
- 4** Press Ctrl+c to exit **nslookup** mode, or type **exit**, and close CMD.

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## Lab Task 5: Domain CLI Vs GUI

In this task, you will configure your network interface using only the CLI.

There are two ways to communicate with a PC: via graphic interface (GUI), or via a Command Line Interface (CLI).

The **netsh** command is run via the CLI, and is used to configure all network settings.

- 1 Open CMD as administrator.
- 2 Display the local PC network configuration using **netsh interface ip show config** .
- 3 Configure the following addresses statically on the wired or wireless interface:
  - IPv4 192.168.0.5
  - Subnet Mask: 255.255.255.0
  - Default Gateway: 192.168.0.1

Use the following command:

```
netsh interface ip set address "Ethernet" static 192.168.10.5 255.255.255.0 192.168.0.1
```

- 4 Use the command in Step 2 above to verify the new configuration.
- 5 Which network protocol is responsible for allocating IP addresses and network configurations dynamically to devices on the network?
- 6 Revert the changes by enabling DHCP on the interface with the command:  
**netsh interface ip set address "Ethernet" dhcp**
- 7 Disable the interface, with the following command:  
**netsh interface set interface "Ethernet" admin=DISABLED**
- 8 Enable the interface, with the following command:  
**netsh interface set interface "Ethernet" admin=ENABLE**
- 9 Ping 8.8.8.8 to verify connectivity.