Saint Louis University
Network Technology with Administration and Maintenance
2nd Semester SY 2017-2018

Basic Networking Commands

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Course and Year: BSIT - 3
ID no. 2163227
Schedule: 11:00-12:30 TF

Environment: Windows

Objectives:
1. To become familiar with some of the commands used for basic network configuration and troubleshooting functions on host computers.
2. To become familiar with some of the commands used for basic device configuration and troubleshooting.

Part I. Examining Networking Properties Settings

Transfer Control Protocol/Internet Protocol (**TCP/IP)** is the basic protocol by which computers on a network talk to each other. Without TCP/IP, networks wouldn't work.

An ***IP address*** is a number that uniquely identifies every host on an IP network. IP addresses operate at the Network layer of the TCP/IP protocol stack, so they're independent of lower-level addresses, such as MAC addresses.

The primary purpose of Internet Protocol (IP) is to enable communications between networks. As a result, a 32-bit IP address consists of two parts:
✓ The network ID (or network address): Identifies the network on which a host computer can be found
✓ The host ID (or host address): Identifies a specific device on the network indicated by the network ID

We will be looking at different tool in this guide, a brief description can be found below:

- **Ipconfig**- displays the IP address, subnet mask, and default gateway for all adapters. There are several options available with the ipconfig command, these are accessible with the command ipconfig /?
- **DHCP** - allows individual computers on a TCP/IP network to obtain their configuration information

Steps:

1. To use a command line. Click start button, select ALL programs, select Accessories, and then select command prompt or click start and search for com or cmd, this opens a DOS command prompt

2. To view your current IP information simply type ipconfig and press ENTER this is an excellent tool to provide basic breakdown of IP address information. The information provided will show you your ip address, subnet mask and your default gateway.

Define the following:

ip address- it establishes a unique identity on every host in a network.

subnet mask- covers an IP address, and divides it into two parts mainly the network and host address.

default gateway- it acts as an access point. It is used to send information to a computer in another network.

What is your ip address? 192.168.4.22
subnet mask? 255.255.255.0
default gateway? 192.168.4.1
Considering your ipaddress,
What is your network id? 192.148.4
What is your host ID? 22

What is the ipaddress of your seatmate? 192.168.4.31
Do you have the same subnet mask? Yes
Do you have the same gateway? Yes

If you're working on the same home setting, your router and your subnet mask will be the same.

3. Next, you'll issue the same command, but add the /all switch to obtain the complete TCP/IP configuration for your workstation. Type ipconfig /all and then press Enter.
Read the output of the ipconfig /all command. If you are connected to a network that uses DHCP, notice the date and time when your lease was obtained and when it is due to expire.

What is the importance of using ipconfig /all? It displays complete TCP/IP configuration.

Lease obtained: Friday, February 02, 2018 11:12:39 AM
Lease Expires: Friday, February 02, 2018 12:42:38 PM

Differentiate lease obtained from lease expires: The lease obtained is getting a request for a modem to request an IP address. Lease expires is the limit before the IP expires

What is the address of your DHCP server? 192.168.4.1

Is your DHCP server the same as your router address? (yes/no) Yes.

What does this mean? It means that your router serves as a DCHP server.

What is the address of your DNS server? 192.168.4.1/192.168.1.1

Is your DNS server the same as your router address? (yes/no) Yes.

What does this mean? It means that the router serves as a DNS server.

If your workstation is running IPv6, note your link-local IPv6 address.
Fe80::d5f9:c49c:e736:21c8%11

Provide additional description of DHCP
- it is used to configure proper subnet mask, default gateway, and DNS server information.

What is the difference between IPv4 and IPv6?
- Ipv4 is written in decimal as four numbers and it is separated by dots, while Ipv6 is written in hexadecimal and it is separated by colons.

4. You might occasionally have to force your client to terminate its DHCP lease. To do so, type ipconfig /release and press Enter.
5. Type ipconfig /all and press ENTER once again. What happened to your IP address information?
- The IP address information disappears.

Define mac address? Also known as Physical Address. It is a unique identifier assigned to network interfaces for communications at the data link layer of a network segment.

What is the mac address of the Ethernet adapter Local Area Network you are using? 20-CF-30-46-8E-F9

6. To renew your DHCP lease, type Ipconfig /renew and press ENTER. If your workstation is properly connected to a network that uses DHCP, you will be issued new IP address information, and it will appear as a result of entering this command.

Compare these values with the ones you wrote down in Steps 2 and 3. Which values changed and which remained the same?
-It all remains the same.

If you do not have the benefit of a DHCP server, you will receive an error message indicating that the DHCP server is unreachable.

7. What is the difference between ipconfig and ifconfig? - ifconfig is used in a unix-like operating system like Linux. Ipconfig is used in the windows OS.
8. To close the command prompt window, type exit.