

EtherNet



Local Area Connection 2
Enabled
FE575C-3Com 10/100 LAN Ca...

Module 2

Computer Connection Set-up

Windows 7 OS

Student Materials

Student Materials for Module 2: Computer Connection Set-up Windows 7

Lesson Objective

By the end of this session, students should be able to:

1. View Computer Network Information
2. Configure Computer for Network Use

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Requirement Note:

For student to configure network settings on computers, they must be able to log-in with Administrator Rights.

Introduction:

The two most common problems when connecting to an Ethernet Network are:

1. Cabling
2. Addressing

This lesson will cover viewing and configuring an address on a computer running Windows 7 operating system.

View Computer IP Address:

There are a number of ways to view a computer's IP address depending on how the OS (Operating System) is configured. The IP address and the Subnet Mask together constitute the computer's IP Network Address. Windows 7 uses version 4 or version 6 IP addressing.

Verify computer's IP address::

Right click the Start icon on the Desktop and choose Open Windows Explorer.

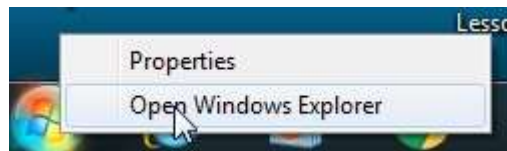


Figure 1-A

Windows Explorers screen opens.

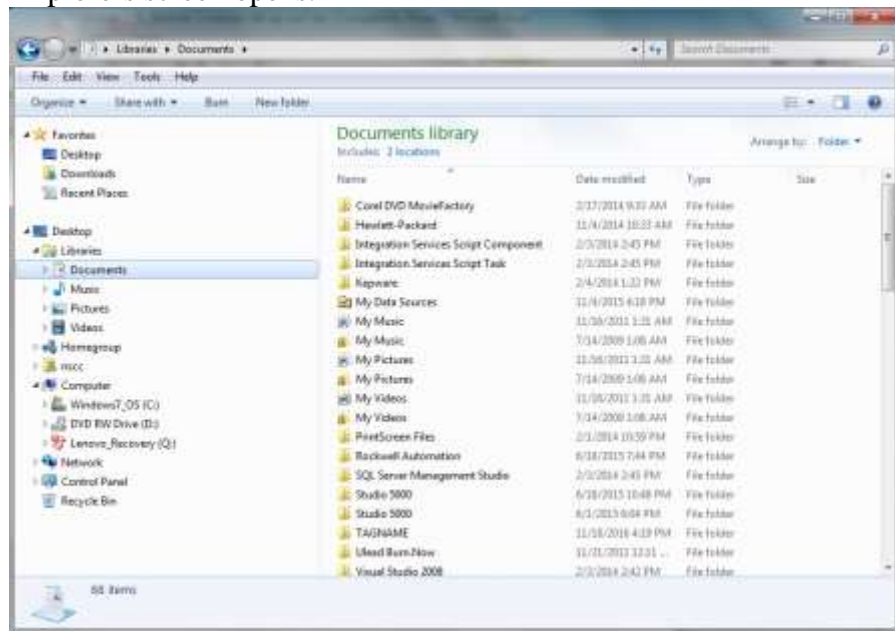


Figure 2-A

From the left screen, select Network.

See Figure 3-A
Right-click Network



Figure 3-A
Windows Explorer – Left Side Screen

Click Properties on the on the context menu.

The Network and Sharing Window opens



Figure 4-A
Network and Sharing Window

A second method to navigate to the Network and Sharing Window is click the Start Icon
Choose Control Panel from the Start Menu – See Figure 5-A



Figure 5-A
Start Menu – Control Panel

Click Control Panel to open the All Control Panel Items window.

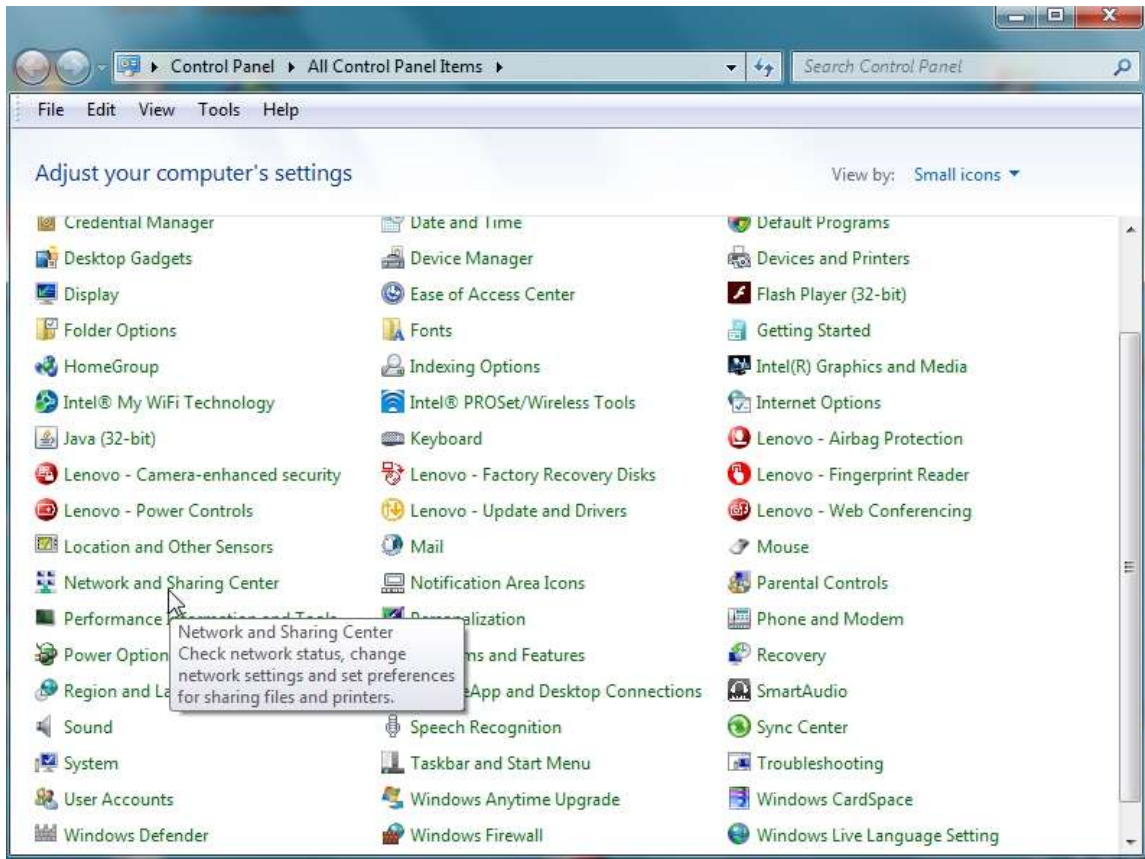


Figure 6-A

All Control Panel Item Window

Select / Click Network and Sharing Center

The Network and Sharing Window opens



Figure 7-A

Network and Sharing Window

Note: This is the same window as shown in Figure 4-A, page 4.

Click Change adapter settings.

The Network Connections window opens.

Select / Right Click Local Area Connection

Choose Properties from the context menu.

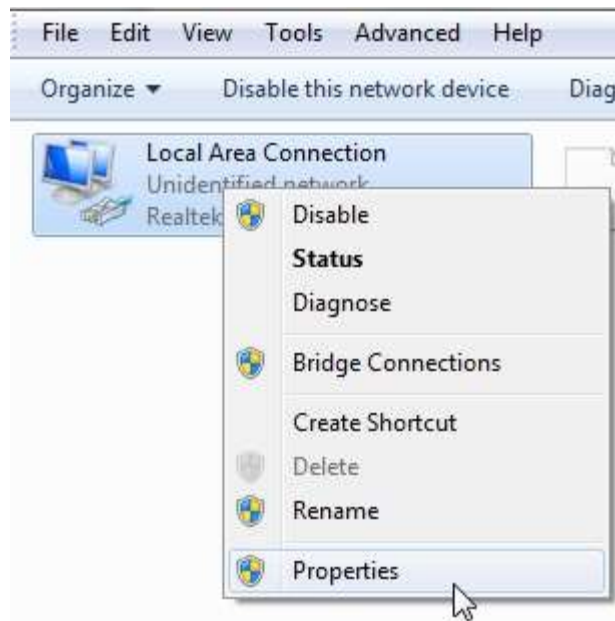


Figure 8-A
Network Connections Window

Note: Local Area Connection represents the Ethernet Port on a computer

A computer with multiple Ethernet ports will have multiple Local Area Connection icons.

Click the Properties selection.

The Local Area Connection Properties window opens.

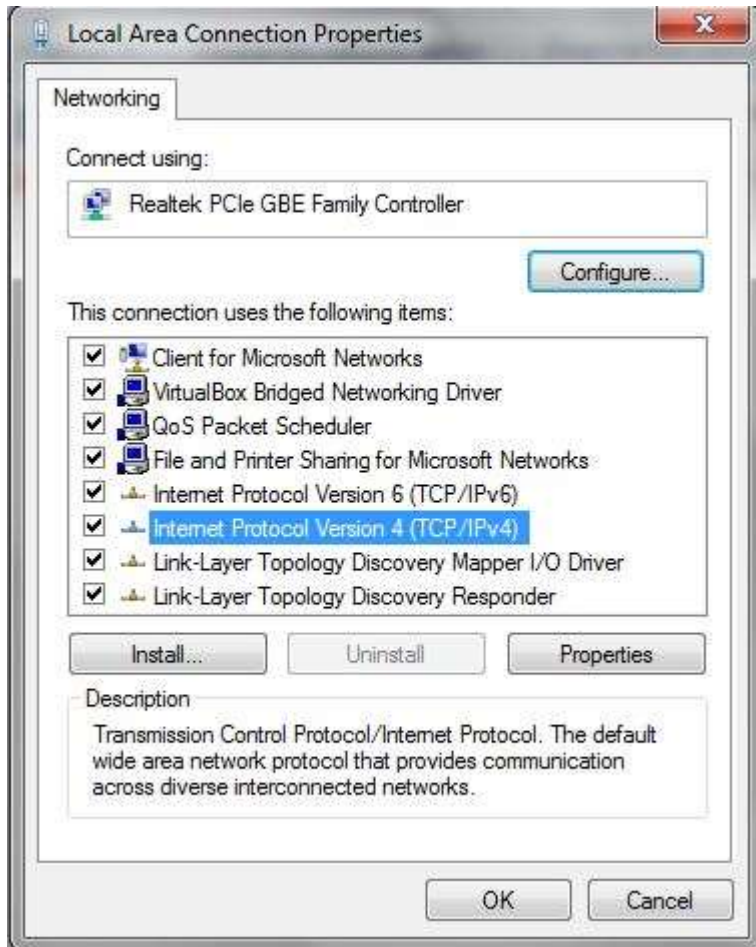


Figure 9-A
Local Area Connection Properties Window

Select Internet Protocol Version 4 (TCP/IPv4)

Note: Windows 7 can use both version 4 and version 6 IP addressing

Version 4 IP addressing – dotted decimal format – 32 bits

Version 6 IP addressing – hexadecimal format – 128 bits

Click the Properties button – See Figure 10-A

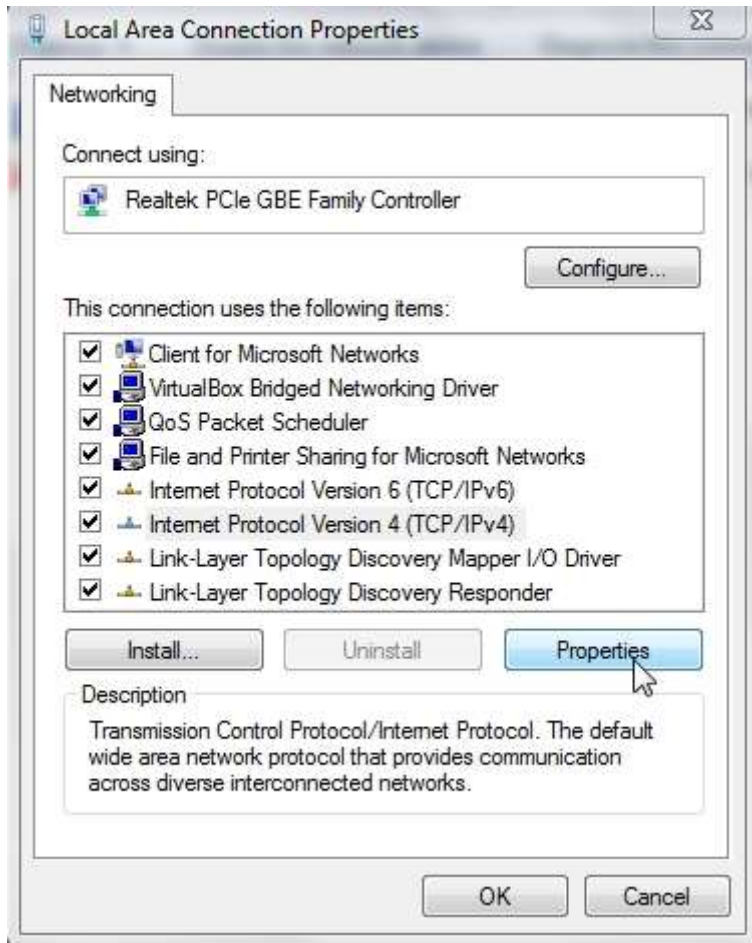


Figure 10-A
Local Area Connection Properties Window – Properties Button

The Internet Protocol Version 4 (TCP/IPv4) Properties window opens – See Figure 11-A.

The Internet Protocol Version 4 (TCP/IPv4) Properties window shows how the Ethernet Port on the computer is configured.

The Obtain an IP address automatically radio button, configures the computer to obtain an IP address from a DHCP Server.

The Use the following IP address radio button, configures the computer to use the IP address, Subnet mask etc. settings

If any changes were made, click the OK button to save changes.

The OK button or the Cancel button will return to the Local Area Connection Properties Window.

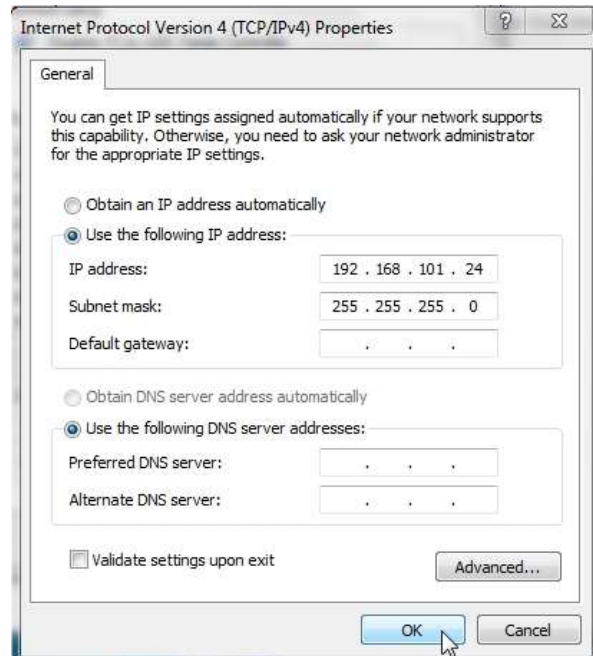


Figure 11-A
Internet Protocol Version 4 (TCP/IPv4) Properties window

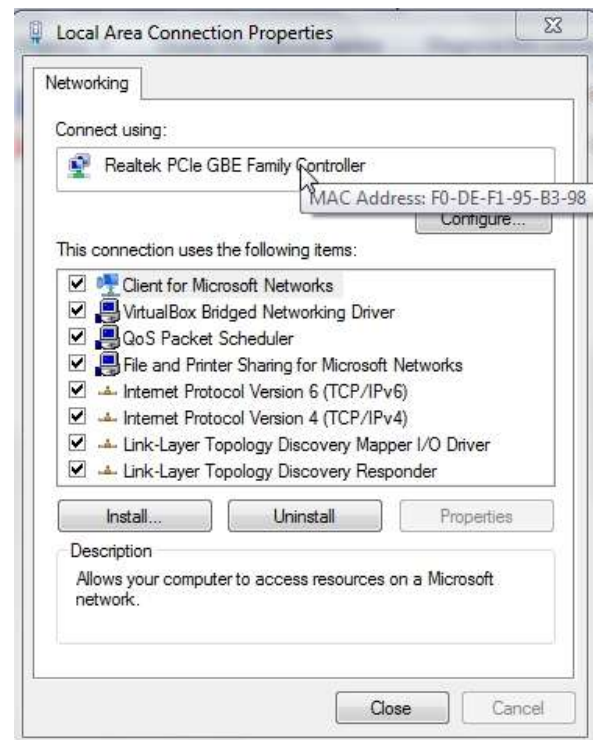


Figure 12-A
Local Area Connection Properties Window

Move the mouse pointer over the Connect using: box and a Tooltip / Infotip shows the MAC address of the Local Area Connection (Ethernet Port) being viewed. Click the Close button on the Local Area Connection Properties window to close the window.

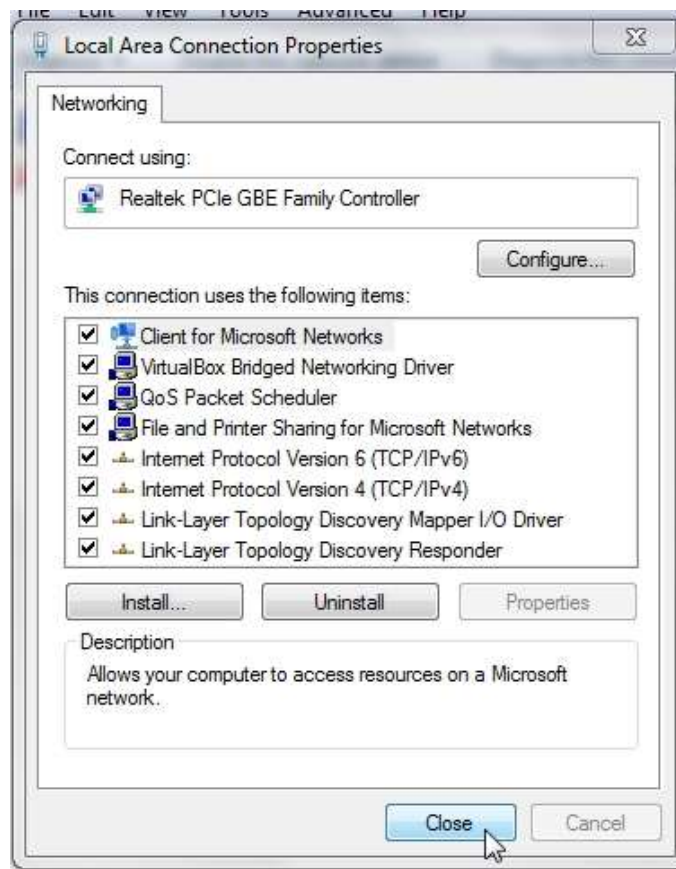


Figure 13-A
Local Area Connection Properties Window – Close Button

IPCONFIG

The IPConfig Command Line utility can be used to view Ethernet Port address information if the computer's network port is powered.

From the Start icon, select Run at the bottom of the Menu list.



Figure 14-A

Type CMD in the Run window to open the Windows command prompt. (Figure 17-A)

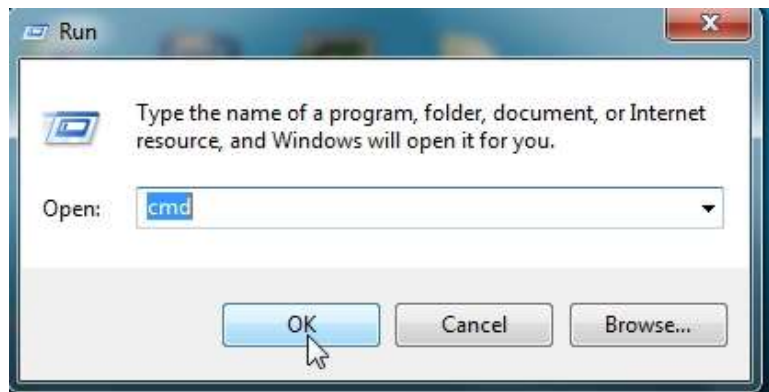


Figure 17-A



Figure 18-A

Windows 7 – Command Prompt

A second method of running the Command Prompt is to select Command Prompt from Accessories from the Start menu.

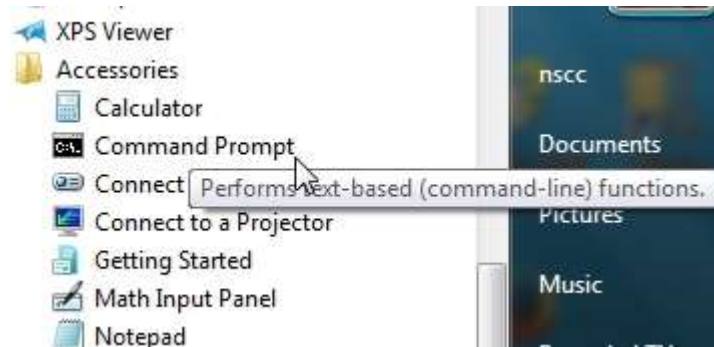


Figure 19-A
Command Prompt – Start Menu

From the command prompt window type IPCONFIG (upper or low case letters). This will display address information for configured Ethernet ports. (Figure 20-A)

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\nscc>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::bc3a:9c83:417f:ac30%17
    IPv4 Address. . . . . : 192.168.101.24
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Tunnel adapter isatap.{679A0C7E-FDBD-4052-BF2A-ECDDA518E6D2}:
  
```

Figure 20-A
Command Prompt – Ipconfig

If the Ethernet Port is not power (no cable from the Ethernet Port on the computer connected to a powered device), Media disconnected will appear on Command Prompt window.

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\nscc>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 
  
```

Figure 21-A

Computer's Ethernet Port not Powered

To view addition Ethernet Port settings, such Physical (MAC) Address use the /all switch
Type IPCONFIG /all at the Command Prompt - See Figure 22-A for configuration information.

Note: The IP Address contains two (2) pieces of information

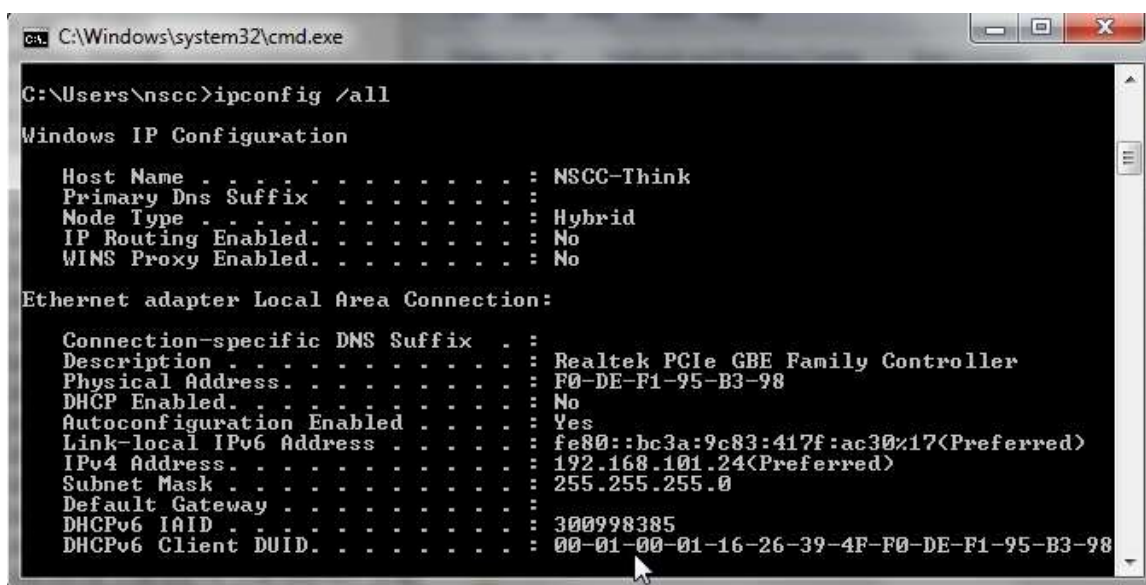
1. Network ID
2. Device (host) ID

The Subnet Mask indicates how the IP address is configured

The 255s in the Subnet mask determine the Network ID of the IP Address.

The zeros (0s) determine the Device (host) ID.

Example: IP Address 192.168.101.24
Subnet Mask 255.255.255.0
Network ID - 192.168.101
Device ID - 24



```

C:\Windows\system32\cmd.exe

C:\Users\nscc>ipconfig /all

Windows IP Configuration

Host Name . . . . . : NSCC-Think
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Local Area Connection:

Connection-specific DNS Suffix . :
Description . . . . . : Realtek PCIe GBE Family Controller
Physical Address. . . . . : F0-DE-F1-95-B3-98
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::bc3a:9c83:417f:ac30%17<Preferred>
IPv4 Address. . . . . : 192.168.101.24<Preferred>
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . :
DHCPv6 Iaid . . . . . : 300998385
DHCPv6 Client DUID. . . . . : 00-01-00-01-16-26-39-4F-F0-DE-F1-95-B3-98
  
```

Figure 22-A
Command Prompt – IPCONFIG /all

MAC ADDRESS:

In addition to the configurable address (IP address and Subnet Mask), each Ethernet device also has a non-configurable address. This address is hard-coded to the Ethernet port by the device manufacturer. The address is viewed as a 48-bit hexadecimal number.

The address is reference by numerous names:

- Ethernet Address
- Physical Address
- MAC (Media Address Control) Address
- Hard-Coded Address

In theory, no two Ethernet devices will have the same MAC address. It is up to device manufacturers to manage the assignment of addresses to the devices they manufacture. This is the actual address that is used by components to complete the communications over an Ethernet network.

Review Questions

1. T F An Ethernet Port has multiple types of addresses
2. Physical addresses are _____ bits long :
 - a) 32
 - b) 16
 - c) 64
 - d) 48
3. Version 6 IP addresses are _____ bits long.
 - a) 48
 - b) 32.
 - c) 64
 - d) 128.
4. T F Windows 7 Ethernet does not use MAC addressing.
5. A Subnet Mask is _____ bits long.

- a) 16
 - b) 32
 - c) 48
 - d) 64
6. T F Windows 7 must use Version 6 IP addressing.
7. T F Incorrect Addressing is a common problem when using Ethernet
8. T F A computers Ethernet Port requires power for the IPCONFIG utility to return Ethernet Port setting information.
9. T F Physical addresses are displayed in decimal format
10. That maximum decimal value in a Subnet Mask address is :
- a) 32
 - b) 32767
 - c) 4,147, 483, 647
 - d) 255
11. A device has an IP Address of 10.50.40.20
and a Subnet Mask of 255.0.0.0
What is the Network ID being used?
- a) 255.0.0.0
 - b) 10.50.40.20
 - c) 10

d) 20

12. A device has an IP Address of 172.168.1.56
and a Subnet Mask of 255.255.0.0
What is the Device ID being used?

a) 255.255.0.0

b) 0

c) 172.168.1

d) 1.56

Review Question Answers

1) T

2) d

3) d

4) F

5) b

6) F

7) T

8) T

9) F

10) d

11) c

12) d



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