Lab 3.6.4 Connect and Configure Hosts

Objectives

- Connect a PC to a router using a straight-through cable.
- Configure the PC with an appropriate IP address.
- Configure the PC with a NetBIOS computer name.
- Verify the PC configuration using Windows XP and through a command prompt.

Background / Preparation

In order for the PC to participate in the local network and the Internet, it must be connected to a network device. The following resources will be required:

- Linksys Model WRT300N wireless router or equivalent SOHO router
- Two computers with Ethernet NICs and Windows XP Professional installed on both
- Two straight-through cables

Step 1: Identify Ethernet ports

a. On the Linksys router, locate the Ethernet (Local Area Network) LAN ports. The Ethernet LAN ports connect your network hosts and devices. The four LAN ports are grouped together in the center of the router as shown in the following figure.

b. On the PC, locate the Ethernet port. The port could be integrated into the motherboard or it could be an adapter. In either case, the port will be an RJ-45 port. The photo shows an Ethernet port on an adapter.

Step 2: Connect the cable between the PC and the router

a. Connect one end of the straight-through Ethernet cable to an Ethernet LAN port on the router.

b. Connect the other end of the cable to the PC Ethernet port.

c. Repeat this procedure for the second PC.

Step 3: Assign the PCs an IP address and default gateway

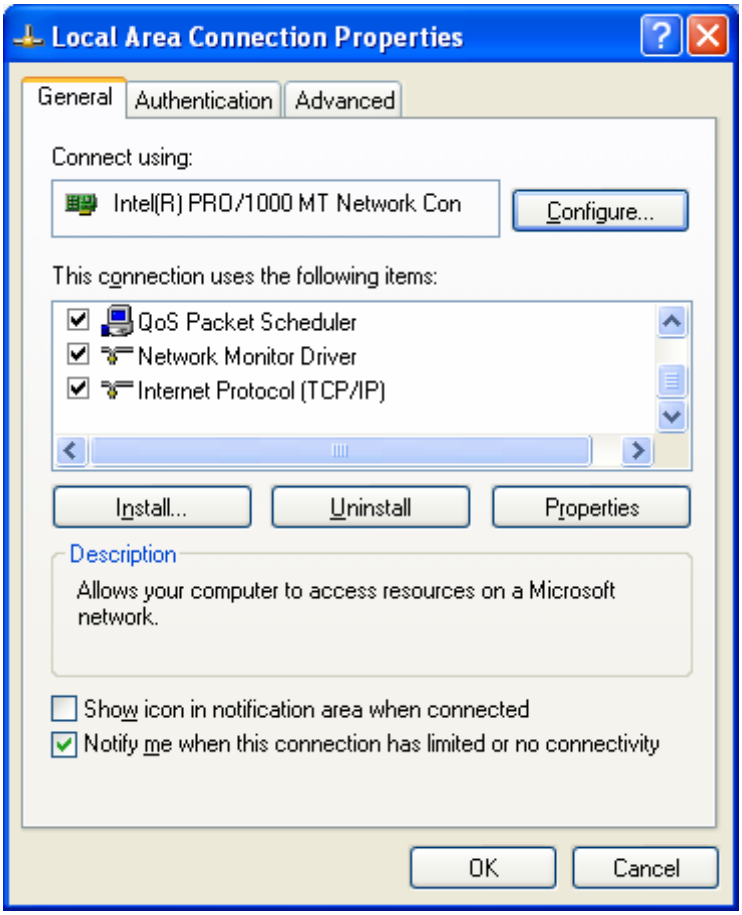
a. In order to assign an IP address and default gateway to a Windows XP host, from the **Start menu,** select **Control Panel.**

b. There are two ways to view Control Panels: Classic view and Category view. The options available depend on which one of these two views you are using. If you see an option on the left that says **Switch to Category View**, you are currently in the Classic view mode. If you see an option on the left that says **Switch to Classic View**, you are currently in Category view mode. Ensure that you are in Classic view mode.

c. Locate and double-click the **Network Connections** control panel icon.

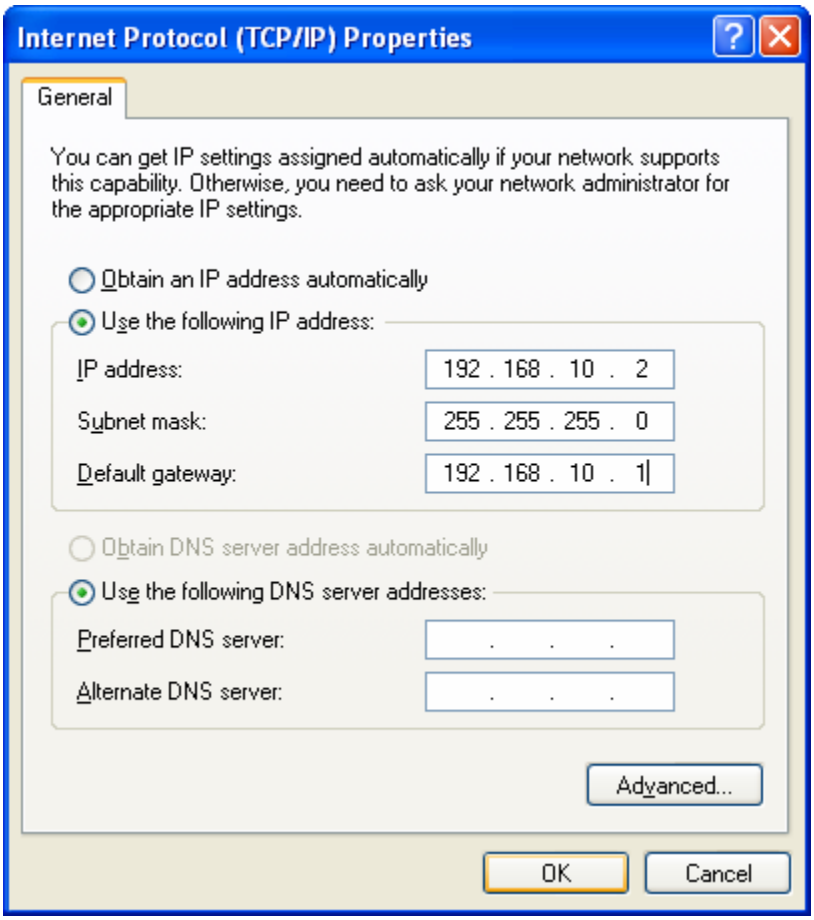
d. Right-click the **Local Area Connection** icon that represents your NIC and click the **Properties** menu option.

e. In the middle window, scroll down until you see and can double-click the **Internet Protocol (TCP/IP)** option. The figure that follows shows this option.



f. Click the **Properties** button and the Internet Protocol [TCP/IP] Properties window will appear.. Next, click the **Use the following IP address** button, which activates the IP address, Subnet mask, and Default gateway textboxes.

In the IP address field, enter **192.168.10.2**. Configure the subnet mask to **255.255.255.0**. Configure the default gateway to **192.168.10.1**. The figure that follows shows these settings. (DNS server information is not necessary at this time, so the fields under **Use the following DNS server addresses** don't need to be filled out.) When finished, click **OK**.



g. From the Internet Protocol [TCP/IP] Properties window, click **OK** to apply the changes. Be patient, since this step may take some time. After the changes are applied, you will be returned to the Network Connections window.

h. Since the two computers are on the same network, their IP addresses will be similar, their subnet masks will be identical, and their default gateways will be identical. Perform the same procedures on the second PC to assign an IP address, subnet mask, and default gateway using the following information:

IP address: 192.168.10.3

Subnet mask: 255.255.255.0

Default gateway: 192.168.10.1

i. Why do you think the IP addresses are different, but the subnet masks and default gateways are the same? _____

_____

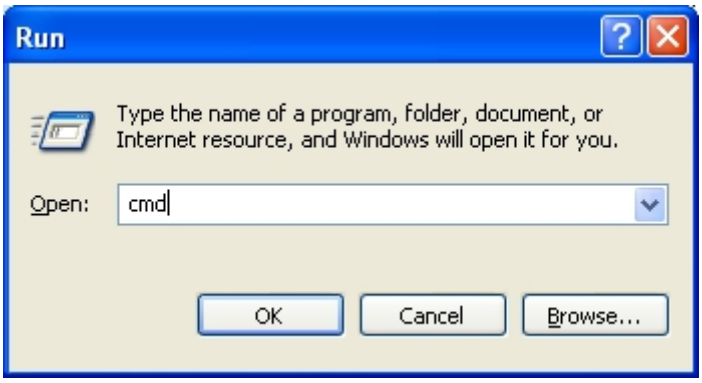
_____

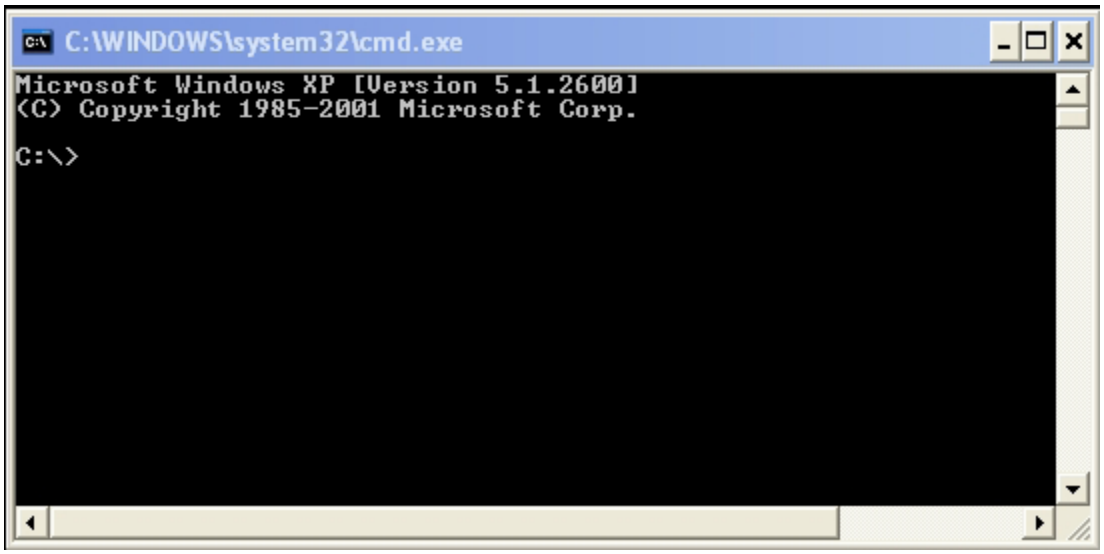
Step 4: Verify the IP address configuration

a. On the Windows XP desktop, click **Start**.

b. From the Start menu, Select the **Run** menu option.

c. In the **Open:** textbox, type **cmd** and press Enter. A command prompt appears. The figures that follow show this process.





d. In the command line prompt, type **ipconfig /all**. Verify that the IP address and the default gateway are the values that you entered in the earlier steps. If they are incorrect, repeat Steps 3 and 4.

e. Are the IP address, subnet mask, and default gateway correct for the first PC? _____

f. Perform the same configuration check on the second PC. If the values are incorrect, repeat Steps 3 and 4.

g. Are the IP address, subnet mask, and default gateway correct for the second PC? _____

Step 5: Test connectivity between the two PCs

NOTE: To test TCP/IP connectivity between the PCs, Windows Firewall must be disabled temporarily on both PCs. Windows Firewall should be re-enabled after the tests have been completed.

a. On PC1, on the Windows XP desktop, click Start. From the Start menu, select Control Panel, and double-click Network Connections.

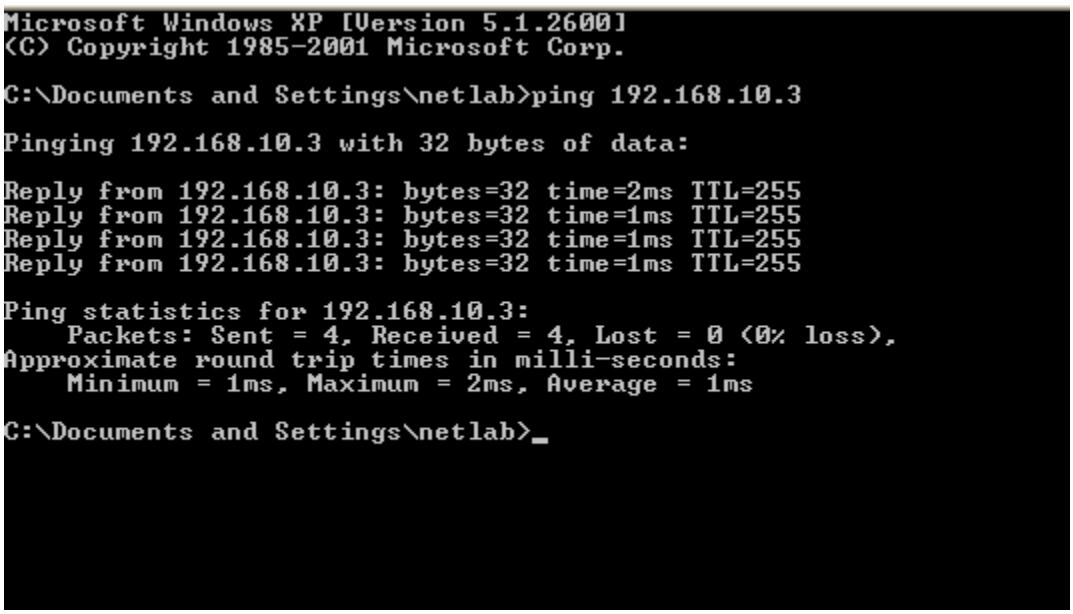
b. Right-click the Local Area Connection icon and select Properties. Click the Advanced tab. Locate and click the Settings button.

c. Make a note of whether the firewall settings are ENABLED (ON) for the Ethernet port or DISABLED (OFF) for the Ethernet port. _____

d. If the firewall settings are enabled, click the Off (not recommended) radio button to disable the firewall. The setting will be re-enabled in a later step. Click OK in this dialog box and the following to apply this setting.

e. From the same command prompt on the first PC, type ping 192.168.10.3 to test connectivity with the second PC.

f. If the ping is successful, you will see results similar to the following figure. If the ping is not successful, perform the appropriate troubleshooting steps such as checking the cabling and checking your IP address, subnet mask, and default gateway assignments.



g. From the command prompt on the second PC, type **ping 192.168.10.2 to** check connectivity to the first PC.

The **ping** should succeed.

Step 6: Configure the NetBIOS name

a. Right-click **Start** and select the **Explore** option.

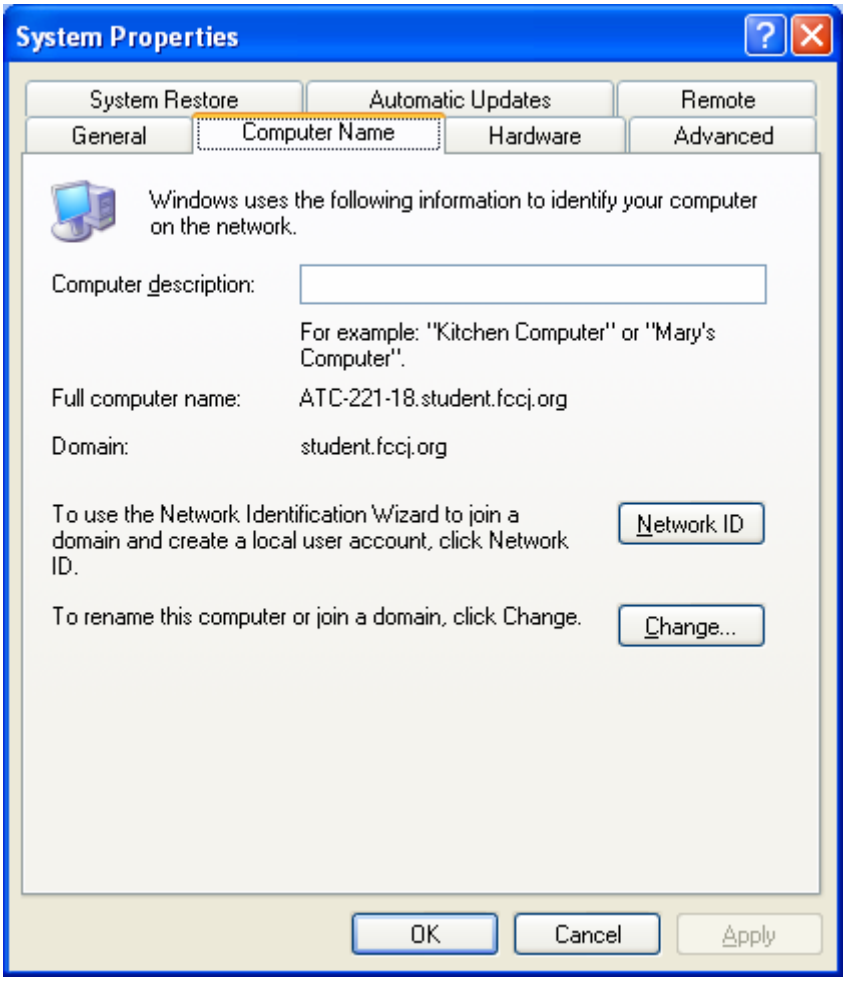
b. How many drive letters are shown in the window that appears? _____

c. Which drive letters are shown? _____

d. Right-click the **My Computer** icon on your Windows XP desktop and select the **Properties** option. The System Properties window appears.

NOTE: If the My Computer icon does not appear on the desktop, click **Start** then right-click **My Computer**.

e. Click the **Computer Name** tab. An example of the window that appears follows:



f. Click **Change**. Make a note of the current computer name. _____

g. In the Computer Name textbox, type **PC1**. Ensure the **Member of** radio button or field is set to **Workgroup**.

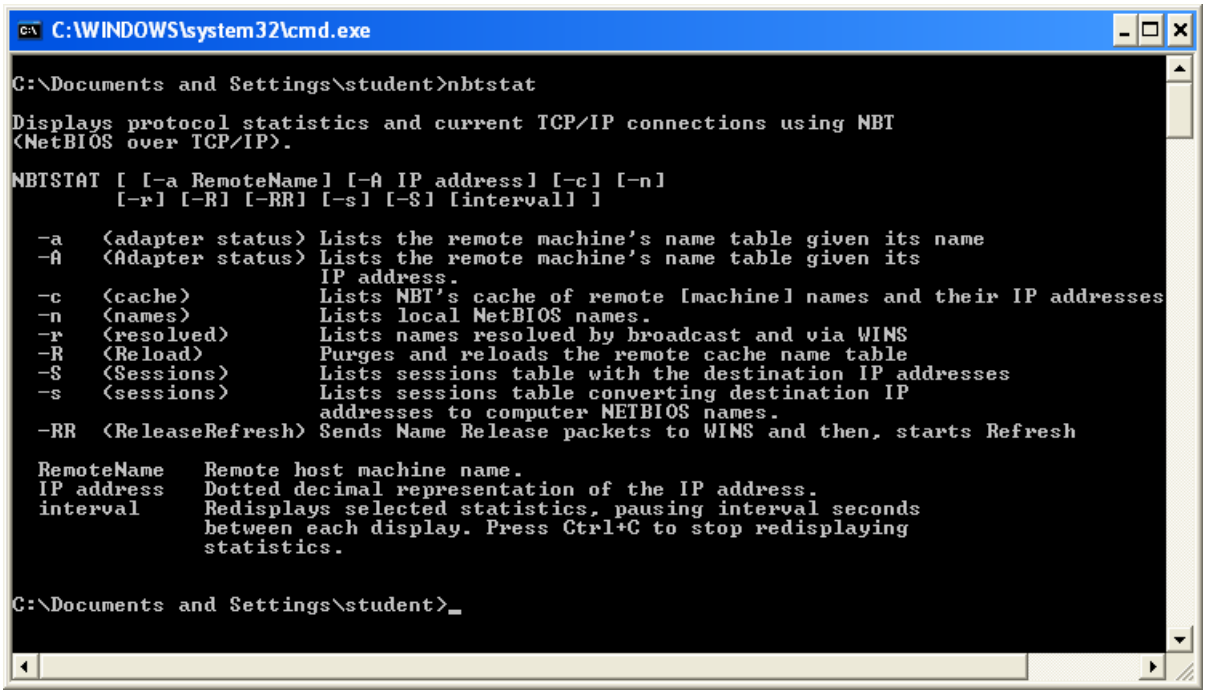
h. Make a note of the Workgroup name. _____

i. Click **OK**. If prompted to restart the computer, click **OK** to restart and follow the directions on the screen.

j. Use the same process to name the second computer **PC2.** Also ensure that the Workgroup name is set to the same value as **PC1**.

Step 7: Verify configuration

a. To verify the new configuration, open a command prompt on each computer. If you forgot how, refer to Steps 4a, b, and c.



b. Use the **nbtstat** command to view and gather information about remote computers. From the command prompt, type **nbtstat** and press Enter. Help for the command displays as shown:

The letters shown are options called switches that you can use with the **nbtstat** command.

a. On PC1, type **nbtstat –n** and press Enter to see the local NetBIOS name of PC1.

b. On PC2, type the same command to verify the NetBIOS name is set to PC2.

c. The **nbtstat –a** command can be used to look at a remote computer's name table. Type **nbtstat** again from the command prompt. Notice in the output that when you use the **–a** switch, you have to put a space and then type a remote computer's name (RemoteName).

From PC1, type **nbtstat –a PC2** and press Enter. The **nbtstat** information for PC2 shows on PC1's monitor.

What command would be used from the command prompt on PC2 to view information about PC1?

_____

d. From PC2, type the appropriate command to view PC1's **nbtstat** information.

e. The **nbtstat –A** (notice that the switch is a capital A this time) can be used to view the same information using an IP address rather than a name. If you type **nbtstat** again, you can see that the command syntax tells us that we use **–A** followed by an IP address. The IP address is that of the remote computer.

From PC1, type **nbtstat –A 192.168.10.3** to see the same information that was returned by the **nbtstat –a PC2** command.

f. Write the command that would be typed on PC2 to view information about PC1, using the IP address of PC1 instead of the NetBIOS name. _____

g. From PC1, you can use the **ping** command to verify connectivity. However, instead of using an IP address, you can use the NetBIOS name. From the PC1 command prompt, type **ping PC2** (notice the capitalization). The result should be successful.

h. From PC1, type **ping pc2** (notice the capitalization).

i. Does the **ping** succeed using lower case letters? _____

j. You can use the **nbtstat –r** command to see NetBIOS names that have been resolved (they are known). From the PC1 and PC2 command prompt, type **nbtstat –r** to see that the remote computer is known using NetBIOS.

k. Close the command prompt window.

Step 8: (Optional – Use only if the Firewall was originally ENABLED) Re-enable the firewall

a. If the answer to Step 5c was OFF or ENABLED on PC1, click **Start**, select **Control Panel**, and open the **Network Connections** control panel.

b. Right-click the Ethernet network connection icon and select **Properties**. Click the **Advanced** tab. Locate and click **Settings**.

c. If the firewall settings are disabled (and they were enabled before this lab began), click the **On** radio button to disable the firewall. Click **OK** in this dialog box and the following one to apply this setting.

Step 9: Return IP Address and NetBIOS Name to original values

a. Return to Step 3 to change the IP address back to the original.

b. Return to Step 6d to change the NetBIOS name back to the original.

Step 10: Reflection

a. Check two or three computers in your lab at school. Complete the following table:

	Computer Name	**IP Address & Subnet Mask**	**Default Gateway**
1			
2			
3			

b. Either with a classmate assigned to you or by choosing one yourself, share this information with them.

In your opinion, are the names descriptive? _____

c. Are all of the computers in the classroom part of the same local network? How could you prove that?

_____