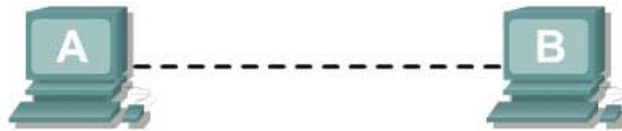






Network I Lab 05

Establishing peer 2 peer and star network

Part 01: Building a Peer-to-Peer Network



Straight-through cable	
Serial cable	
Rollover (console)	
Crossover cable	

Objective

- Create a simple peer-to-peer network between two PCs
- Identify the proper cable to connect the two PCs
- Configure workstation IP address information
- Test connectivity using the **ping** command.

Background / Preparation

This lab focuses on the ability to connect two PCs to create a simple peer-to-peer Ethernet LAN between two workstations. The workstations will be directly connected to each other without using a hub or switch. In addition to the Layer 1 physical and Layer 2 data link connections, the computers must also be configured with the correct IP network settings, which is Layer 3, so that they can communicate. A basic Category 5/5e UTP crossover cable is all that is needed. A crossover cable is the same type that would be used as backbone or vertical cabling to connect switches together.

Connecting the PCs in this manner can be very useful for transferring files at high speed and for troubleshooting interconnecting devices between PCs. If the two PCs can be connected with a single cable and are able to communicate, then any networking problems are not with the PCs themselves.

Start this lab with the equipment turned off and with cabling disconnected. Work in teams of two with one person per PC. The following resources will be required:

- Two workstations with an Ethernet 10/100 NIC installed
- Several Ethernet cables, which are both straight-through and crossover, to choose from for connecting the two workstations

Step 1 Identify the proper Ethernet cable and connect the two PCs

- a. The connection between the two PCs will be accomplished using a Category 5 or 5e crossover cable. Locate a cable that is long enough to reach from one PC to the other, and attach one end to the NIC in each of the PCs. Be sure to examine the cable ends carefully and select only a crossover cable.
- b. What kind of cable is required to connect from NIC to NIC?

c. What is the category rating of the cable?

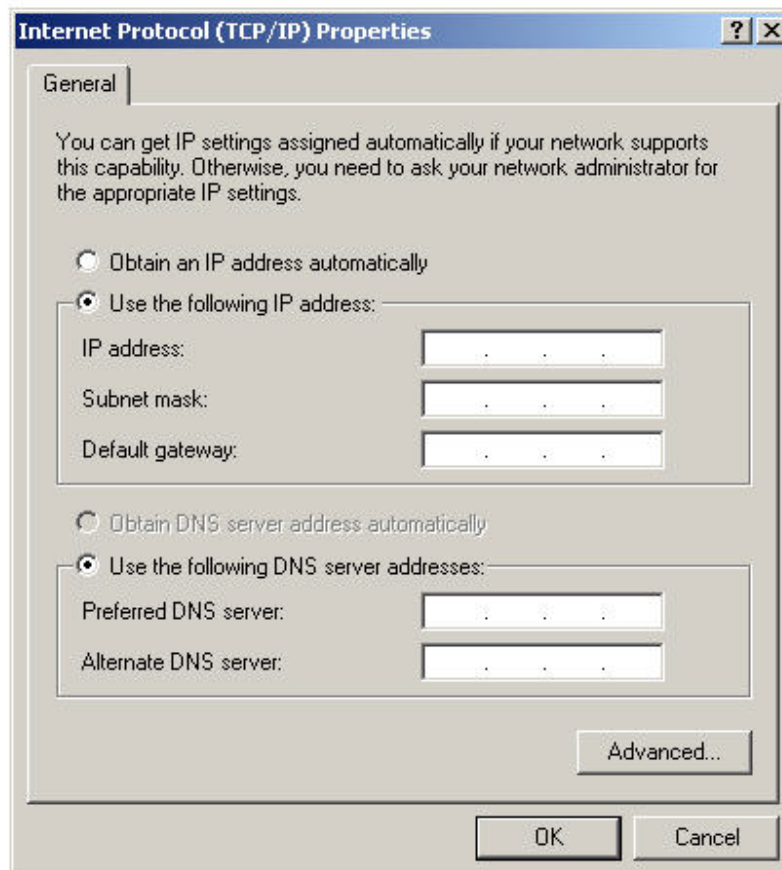
d. What is the AWG wire size designation of the cable?

Step 2 Verify the physical connection

- a. Plug in and turn on the computers. To verify the computer connections, insure that the link lights on both NICs are lit. Are both link lights lit?

Step 3 Access the IP settings window

Note: Be sure to write down the existing IP settings, so that they can be restored at the end of the lab. These include IP address, subnet mask, default gateway, and DNS servers. If the workstation is a DHCP client, it is not necessary to record this information. Windows XP users should do the following:



- Click on **Start > Settings > Control Panel** and then click the **Network Connection** icon.
- Select the **Local Area Network Connection** and click on **Change settings of this connection**.
- Select the **TCP/IP protocol** icon that is associated with the NIC in this PC.
- Click on **Properties** and click on **Use the following IP address**.

Step 4 Configure TCP/IP settings for the two PCs

- Set the IP address information for each PC according to the information in the table.
- Note that the default gateway IP address is not required, since these computers are directly connected. The default gateway is only required on local area networks that are connected to a router.

PC	IP	Sub net mask	Gateway
Pc01	192.168.1.1	255.255.255.0	Not required
Pc02	192.168.1.2	255.255.255.0	Not required

Step 5 Access the Command or MS-DOS prompt

Windows XP users should do the following:

Start > Programs > Accessories > Command Prompt

Step 6 Verify that the PCs can communicate

- Test connectivity from one PC to the other by pinging the IP address of the opposite computer.

Use the following command at the command prompt.

C:>ping 192.168.1.1 (or 192.168.1.2)

- Look for results similar to those shown below. If not, check the PC connections and TCP/IP

settings for both PCs. What was the ping result?

```

C:\ Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Owner>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=150
Reply from 192.168.1.1: bytes=32 time<1ms TTL=150
Reply from 192.168.1.1: bytes=32 time<1ms TTL=150
Reply from 192.168.1.1: bytes=32 time<1ms TTL=150

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Owner>

```

Step 7 Confirm the TCP/IP network settings

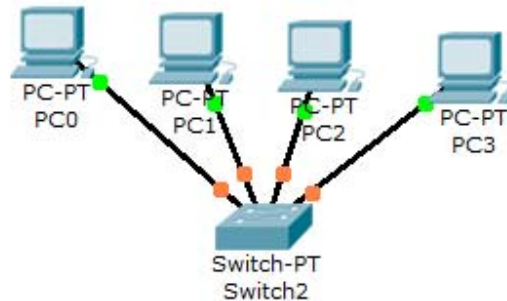
Windows NT / 2000 / XP users should do the following:



b. Type the **ipconfig** command from the Command Prompt. Record the results:

Step 8 Restore the PCs to their original IP settings, disconnect the equipment, and store the cables

Part 02: Building start network



Objective

- Create a simple network with four PCs using a hub
- Identify the proper cable to connect the PCs to the hub
- Configure workstation IP address information
- Test connectivity using the **ping** command

Background / Preparation

This lab focuses on the ability to connect two PCs to create a simple hub-based Ethernet LAN using two workstations. A hub is a networking concentration device sometimes referred to as a multiport repeater. Hubs are inexpensive and easy to install, but they permit collisions to occur. They are appropriate for a small LAN with light traffic. In addition to the physical and data link connections, which are Layers 1 and 2, the computers must also be configured with the correct IP network settings, which is Layer 3, so that they can communicate. Since this lab uses a hub, a basic Category 5/5e UTP straight-through cable is needed to connect each PC to the hub. This is referred to as a patch cable or horizontal cabling, which is used to connect workstations and a typical LAN. Start this lab with the equipment turned off and with cabling disconnected. Work in teams of two with one person per PC. The following resources will be required:

- Two workstations with an Ethernet 10/100 NIC installed
- Ethernet 10BaseT or Fast Ethernet hub
- Several Ethernet cables, which are straight-through and crossover, to choose from for connecting the two workstations

Step 1 Identify the proper Ethernet cable and connect the two PCs to the hub

a. The connection between the two PCs and the hub will be accomplished using a Category 5 or 5e straight-through patch cable. Locate two cables that are long enough to reach from each PC to the hub. Attach one end to the NIC and the other end to a port on the hub. Be sure to examine the cable ends carefully and select only a straight-through cable.

b. What kind of cable is required to connect from NIC to hub?

c. What is the category rating of the cable?

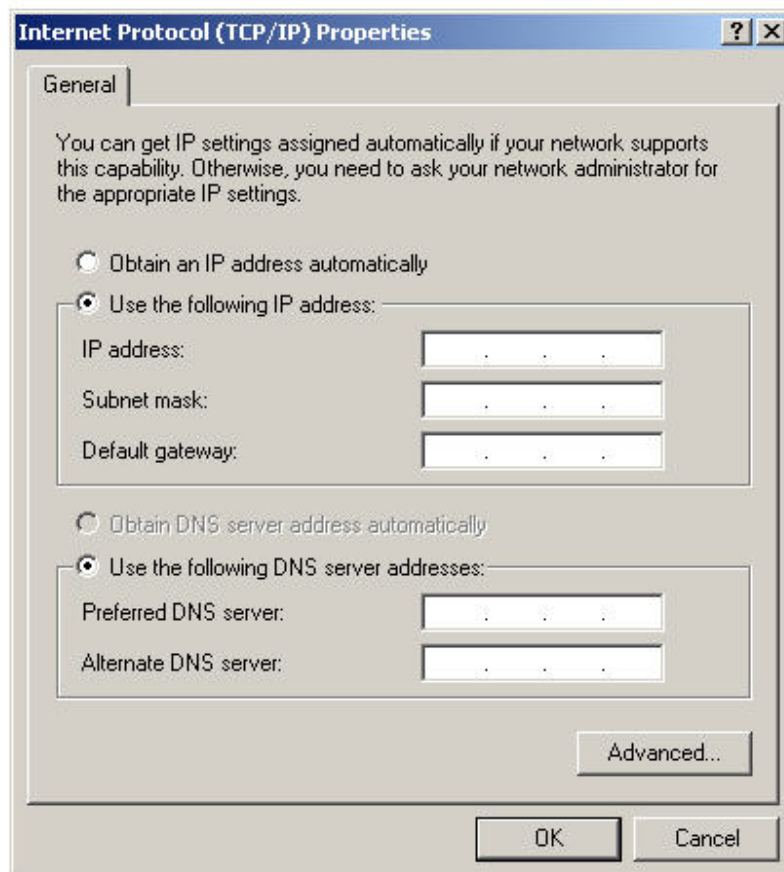
d. What is the AWG wire size designation of the cable?

Step 2 Verify the physical connection

a. Plug in and turn on the computers. To verify the computer connections, insure that the link lights on the both PC NICs and the hub interfaces are lit. Are all link lights lit?

Step 3 Access the IP settings window

Note: Be sure to write down the existing IP settings, so that they can be restored at the end of the lab. These include IP address, subnet mask, default gateway, and DNS servers. If the workstation is a DHCP client, it is not necessary to record this information. Windows XP users should do the following:



- Click on **Start > Settings > Control Panel** and then click the **Network Connection** icon.
- Select the Local Area Network Connection and click on **Change settings of this connection**.
- Select the **TCP/IP protocol** icon that is associated with the NIC in this PC.
- Click on **Properties** and click on **Use the following IP address**.

Step 4 Configure TCP/IP settings for the four PCs

a. Set the IP address information for each PC according to the information in the table.

b. Note that the default gateway IP address is not required, since these computers are directly connected. The default gateway is only required on local area networks that are connected to a router.

PC	IP	Sub net mask	Gateway
Pc01	192.168.1.1	255.255.255.0	Not required
Pc02	192.168.1.2	255.255.255.0	Not required
Pc03	192.168.1.3	255.255.255.0	Not required
Pc04	192.168.1.4	255.255.255.0	Not required

Step 5 Access the Command or MS-DOS prompt

Windows XP users should do the following:

Start > Programs > Accessories > Command Prompt

Step 6 Verify that the PCs can communicate

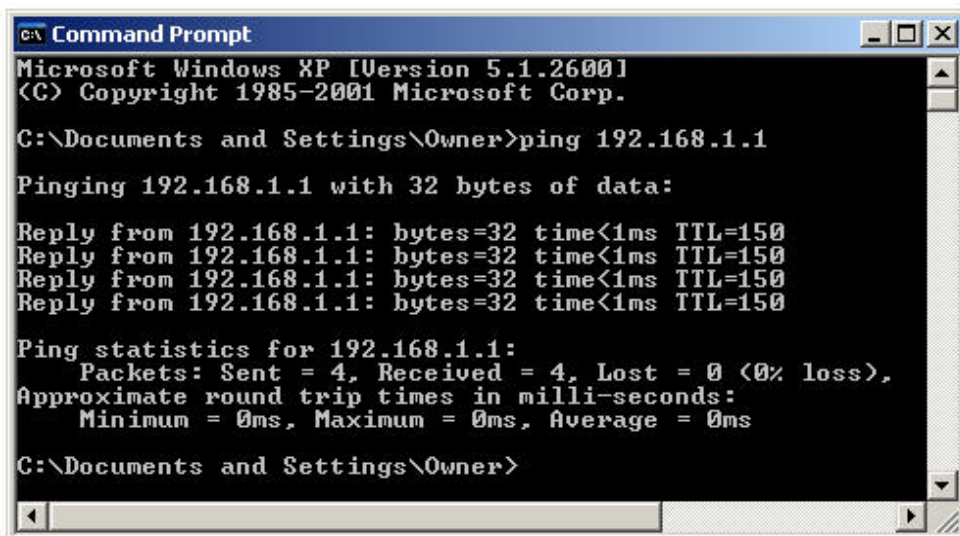
a. Test connectivity from one PC to the other through the hub by pinging the IP address of the

opposite computer. Use the following command at the command prompt.

C:>ping 192.168.1.1 (or 192.168.1.2)

b. Look for results similar to those shown below. If not, check the PC connections and TCP/IP

settings for both PCs. What was the ping result?



```

C:\Documents and Settings\Owner>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=150
Reply from 192.168.1.1: bytes=32 time<1ms TTL=150
Reply from 192.168.1.1: bytes=32 time<1ms TTL=150
Reply from 192.168.1.1: bytes=32 time<1ms TTL=150

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\Owner>
  
```

Step 7 Confirm the TCP/IP network settings

Windows NT / 2000 / XP users should do the following:

b. Type the **ipconfig** command from the Command Prompt. Record the results:

Step 8 Restore the PCs to their original IP settings, disconnect the equipment, and store the cables

Part 03 : establishing network connection using telnet and hyper terminal

Objectives

Is to use basic console applications like telnet and HyperTerminal to connects pcs over network.

Hyper terminal will act as server which accepts incoming sessions and telnet acts as client which establishes connections.

Steps

1. Hyper terminal

1.1 open hyper terminal

1.2 type connection name

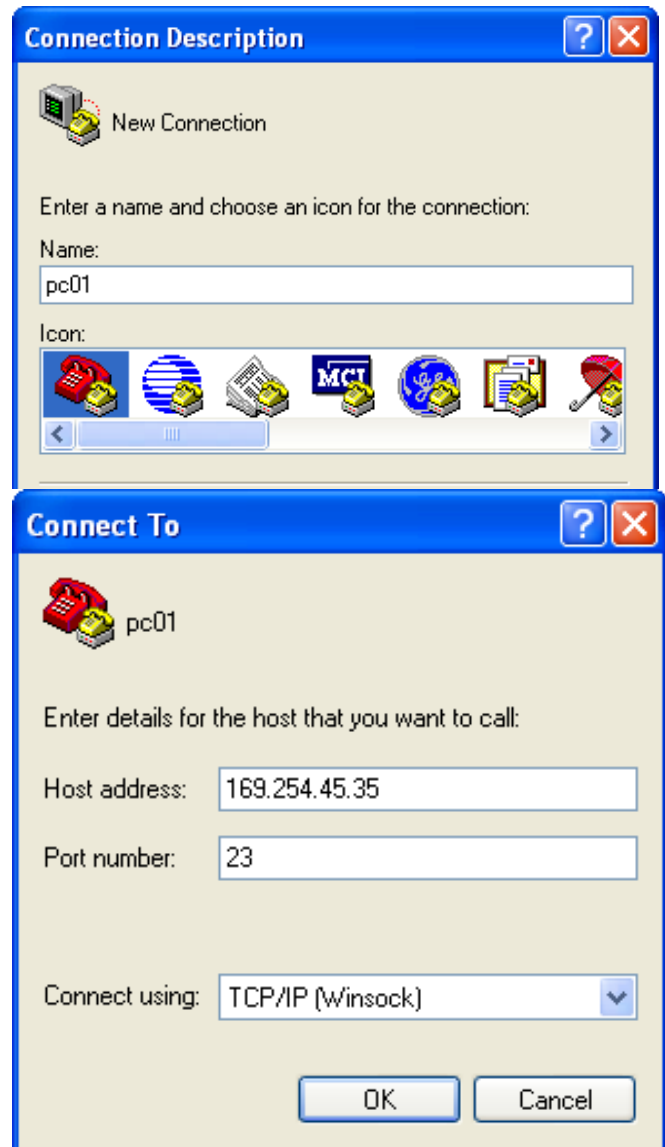
1.3 type remote site details

remote IP

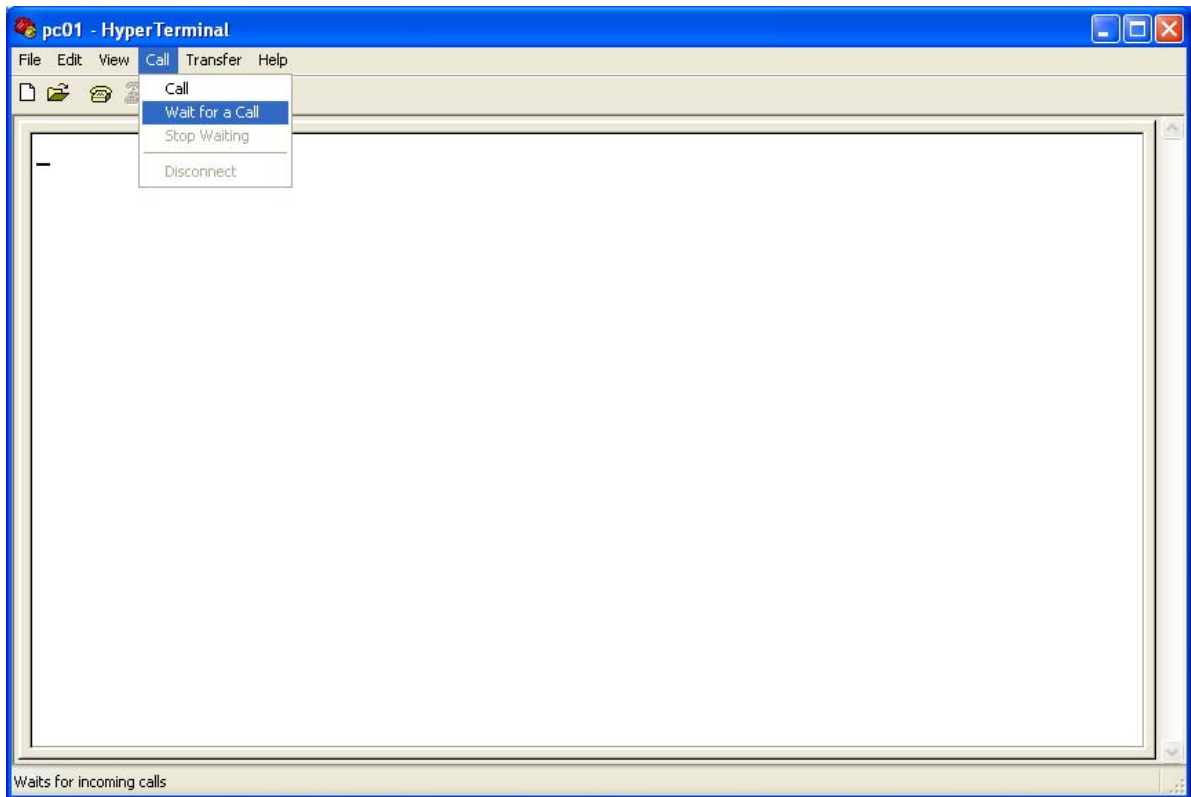
connection port (23 telnet

default port)

1.4 to make hyper terminal operates in client mode, select call from call menu



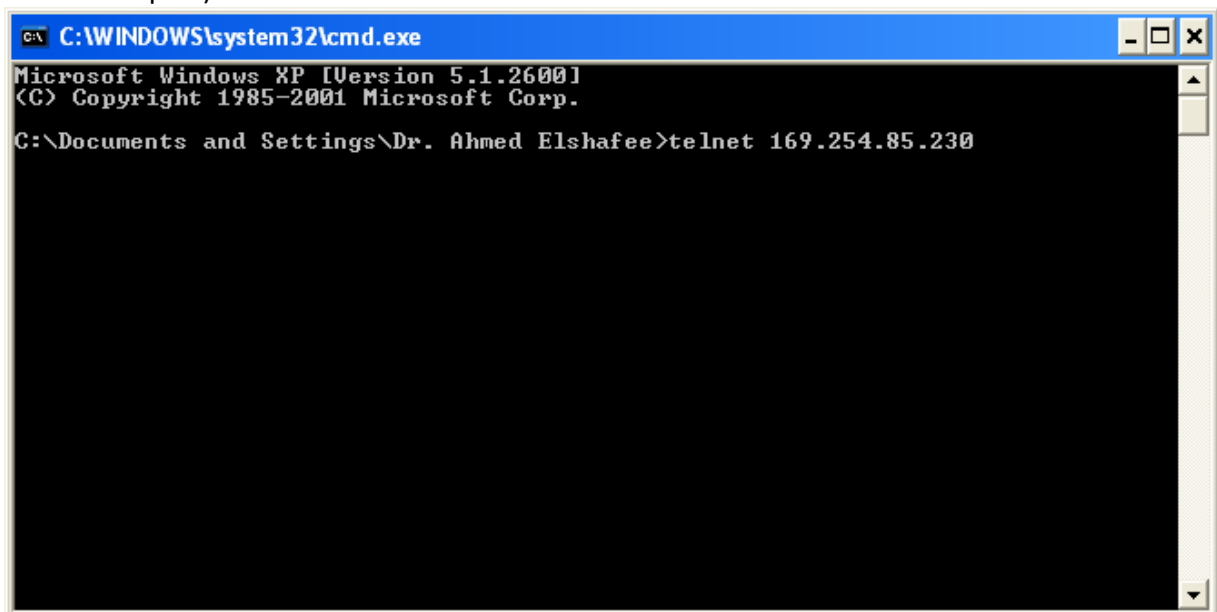
1.5 to make hyper terminal operates in server mode, just select wait for call from call menu



2. telnet

2.1 open command prompt

2.1 type telnet command followed by remote ip address and port number (23 is the default port)





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2.3 simply whatever you typed in each of software will appear in the other one.