Experiment # 3

Peer to Peer and Client Server Network Models

Objectives:

Build a small network using Windows-2000 operating system networking features. This includes:

1. Writing the network parameters used in the lab
2. Install TCP/IP protocol
3. Manually configure TCP/IP parameters
4. Use *ipconfig* utility to view configured TCP/IP parameters.
5. Use *ping* utility to test TCP/IP communications.
6. Share a folder
7. Assign shared folder permissions to users and groups
8. Connect to the shared folder
9. Stop sharing a folder.
10. Using *arp* command
11. Using *netstat* command to view the established and listening connections to the computer.

1. Write the network parameters used in the lab.

Network Architecture:

Cable Type:

Connector Type to Network Card:

Network Card brand name:

2. Peer to Peer Networking:

Network Addresses Settings

1. Log on computer as a local *administrator*
2. Go to **Settings**, then **Network and Dial-up Connections**, then check the properties of **Local Area Network**
3. First we will remove all the protocols, Click on **Internet Protocol (TCP/IP)** and then click on **uninstall** and *restart* the computer.

4. After restarting your computer, you log on again as local *administrator*, and again go to *Local Area Network Properties*, you will see there is no protocol installed and you can not access any network resources.
5. To add protocols, Click on **install**, select on *Protocol*, click on **Add**, select *Internet Protocol (TCP/IP)* and then click ***ok***.
6. In *Local Area Connection Properties* window, select *Internet Protocol (TCP/IP)* then click **Properties**.
7. Either you check on *Obtain an IP address automatically* the IP address would be assigned to your computer automatically by DHCP server, or if you check on *Use the following IP address* then you would have to enter the static IP address with proper subnet mask and gateway address. (The lab instructor will tell you the static IP address of the computer, subnet mask and default gateway).
8. Check *Use the following DNS server addresses*, Enter **196.15.32.126** in the *preferred DNS server* (Primary DNS server) and enter **196.15.32.192** in the *Alternate DNS server* (Secondary DNS server).
9. Click on **Advanced**, in *IP settings* tab you will see the computer IP address and gateway address, if there is no gateway address present, then click **Add**, enter the *default gateway address* and click **Add** again.
10. Click **DNS** tab, you will see the DNS server addresses.
11. Click **WINS** tab, if there is no WINS addresses, click on **Add**, and enter **196.15.32.158**, click **Add**.
12. Now click **OK**, click **OK** again on TCP/IP properties window.
13. Click close on Local Area Connection Properties window.

Network Identification Settings:

1. Right click on **My Computer** icon on desktop, click on **Properties**, Click on **Network Identification** tag, click on **Properties**.
2. Type computer name **ee400pcX** (where **X** is the number of computer, ask the instructor the number of your computer).
3. In peer-to-peer networking, the computer is standalone or a part of any Workgroup. Check *Workgroup* and type **ee400** in workgroup.
4. Click **OK**, and click **OK** again and restart your computer for new settings to take effect.

Now the TCP/IP and network settings have been completed, in the next exercise we will verify these settings by using *ping* and *ipconfig* DOS commands.

3. Using *ping* and *ipconfig*:

1. Log on as normal *user*. (ask instructor the username and password of the computer)
2. Start *command prompt*, click on **Start**, click **RUN**, and type **cmd** and press enter, you will enter in the DOS command prompt.
3. Type **ping 127.0.0.1** and then press enter. This internal loop-back test should give you four replies if TCP/IP is bound to the Network Adaptor.
4. Now we will test the TCP/IP connectivity, **ping** the EE-400 lab server (the server IP address would be provided by the lab instructor). Four replies messages from server should appear.
5. Try **ping** other computers in the lab. (The IP addresses of other computers would be provided by the lab instructor)
6. To verify the TCP/IP parameters, type **ipconfig/all** and press enter, now you will see the host name of your computer, IP address of your computer, subnet mask, default gateway, DNS servers, WINS and etc.

4. Sharing a Folder

1. Log on as Local *Administrator*, and right click on **Start** button and then click on **Explorer** to start the Windows-2000 Explorer.
2. Create the folder named **Public** at the root directory level of drive D.
3. Right-click the newly created **Public** folder to display the menu and then click on **properties** option.
4. In folder properties window, click on **Sharing** tab. Click on **Share** this folder.
5. There is one option, **User limit**, you can limit the number of users to access this folder, and you can **allow maximum users** to access this shared folder.
6. Now click on **apply** and click **OK**. You will see hand symbol on the Public folder, that shows the sharing of Public folder.

5. Assigning Shared Folder Permissions:

1. Go to Windows-2000 explorer, right-click the **Public** folder, then click **sharing**, Click **Permissions**

2. Permissions for Public window will appear and you will see the permissions are assigned to Everyone. By default the permissions are assigned to Everyone that is all users can access this folder. Now we will modify the permissions settings.
3. Select **Everyone** and Click **Remove**.
4. Click **Add,** and select the **users** and **groups** to whom you want to assign the permission to access this public folder.
5. To assign permissions administrators group, select **Administrators**, then click **Add**.
6. To assign permissions to users group, select **Users**, then click **Add**.
7. Now click **OK**.
8. You will see the *Administrators* and *Users* group in the permissions window. Select *Administrators* and see the permissions assigned to this group. You will see the *Read* permission is assigned to the Administrator group by default. Here you can change the permissions to the administrator group, Check **Full Control** and click **Apply**.
9. Now select the *Users* group and see the permissions assigned to the Users group. By default Users group has Read permissions.
10. You can change the permissions for Users group and you can also assign permissions to a specific user with the same procedure.

6. Connecting to a Shared Folder using RUN command

1. Log on as a normal *user*.
2. Click **Start**, and then click **Run**
3. In the open box, type **\\ee400pc1** and then click **OK**. The **EE400PC1** window appears and only the folders that are shared appear to network users.
4. Close the **ee400pc1** window.

7. Connecting to a Shared Folder using MAP Network Drive

1. On the desktop, Right-click **My Network Places**, then click on **Map Network Drive**.
2. Select Drive letter as **Z**. (You can select any available drive letter E through Z).
3. In Folder option, type the correct path as **\\ee400pc1\Public**.
4. Uncheck the option of *Reconnect at logon*. If you will check this option, the drive will be mapped whenever the computer re-starts.
5. Then click **Finish**.
6. Now Start the Windows Explorer and view the drives under *My Computer*. You will see a directory has been added as Public on ee400pc1.

8. Disconnecting the Mapped Network Drive

1. Start the Windows Explorer, and right-click on the drive letter **Z**. (the drive letter which is mapped with network drive).
2. Click **Disconnect**. The mapped network drive would be removed from the left pane of the Windows Explorer.

9. Stopping a Shared Folder

1. Log on as local *administrator*, then Start Windows Explorer.
2. Locate the *Public* Folder, and right-click on the folder and click **Sharing**.
3. In the *Sharing* tab of Public Properties, Click on *Do not Share this folder*.
4. Then click on **Apply** and click **OK**.
5. Now you can delete the *Public* folder.

10. ARP Cache

1. Log on as a Local **Administrator**.
2. Start the command prompt, type **arp –a** and then press **Enter** to view the ARP cache.
3. Write the entries in ARP cache below:

_____

_____

_____

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4. **Ping** the IP address of any computer in the lab. (ask the Instructor which IP address to be pinged). This will add an entry to the arp cache.
5. View the new entry in arp cache.
6. To remove the any entry in the ARP cache, type **arp –d** IP_address. (where the IP_address is the one to be removed from the ARP cache).

11. Using *netstat* DOS command

The *netstat* utility queries a host about its TCP/IP network status. It can also find the state of the routing table in a host, which TCP/IP server processes are active in the host, and which TCP connections are active.

1. Start DOS command prompt, type **netstat** and then press **Enter**. You will see the list of established connections with your computer.
2. Now type **netstat –a**, it will display all the connections and listening ports.
3. Now create a **Public** folder on your computer and make **sharing** the Public folder and assign permission to Everyone.
4. Ask your neighboring friend to map Public folder.
5. When your friend has mapped the Public folder of your computer, then Start DOS command prompt and type **netstat –a**. You will see the computer name of your friend who mapped the Public folder of your computer.