
Southern Polytechnic State University

Electrical and Computer Engineering Technology Department

ECET 4820 Laboratory Exercise: Windows Workgroup Networking

Objective:

The student will examine some characteristics of a Microsoft Windows Workgroup network which is a type of peer-to-peer network.

Introduction:

You will log on to computers running the Windows 7 professional operating system. These machines are in a workgroup, which is Microsoft's version of a peer-to-peer network. As such, share access privileges are controlled in a distributed fashion, where the administrator of each workstation can set password access to shares. The first time you log on, you will log on to the domain and perform some non-administrative tasks.

Procedure:

Log On to Your Workstations

1. Log on to your workstation and verify workgroup status.
 - a) Log on to your workstation with the username specified by your instructor and set the IP configuration to the one specified by your instructor. The username must be a member of the Administrator's group.
 - i) Make sure you are connected to the lab's *local* network, not directly to the campus.
 - ii) Ping the default gateway to make sure you have connectivity.
 - b) Check to see if the **Computer** icon appears on your desktop. If not, right click somewhere in the middle of your desktop and choose **Personalize > Change** desktop icons and select **Computer** and **Network**. Then click **OK**.
 - b) Right click on the **Computer** icon and select **Properties**. Click on **Advanced system settings > Computer Name** tab of the **Network Properties** box.
 - Is your computer part of a **Workgroup** or a **Domain**?

Full Computer Name: _____

Workgroup or Domain Name: _____

Turn off Firewalls

Workstation firewalls are designed to stop unauthorized network access from the outside to your computer or to stop a malicious program on your computer from accessing the network. Windows has a built-in firewall that can be enabled. Also, your lab computer will likely have a non-Microsoft firewall running. You should only run one firewall if you choose to. Note that the Windows firewall has exceptions for file sharing port access already enabled but the other may not. For this exercise, we want all firewalls off.

1. If a non-Microsoft firewall is running on your computer, turn it off. Check to see that Windows Firewall is off as well.

Shared Resources

2. Folders can be shared in workgroups. They are available to users with usernames having accounts on the individual computer or they can be made available for Everyone. There are two types of file sharing, **Public folder sharing** and **Standard folder sharing**. Public folder sharing allows the folders in the %SystemDrive%\Users\Public to be shared. Access permissions are set on the Public folder. The Public folder works like a drop box. Content must be moved there to be shared. Anyone who logs on to the computer has access to the Public folder if it is shared. There is no distinction between account levels. The simple method is to be avoided in a business environment.

Standard sharing permits any folder to be shared. There are **access permissions** and **share permissions**. These permissions are implemented through the capabilities of the NTFS file system. Any Windows 7 computer in a business environment should be formatted with the NTFS file system. Access permissions determine which user or which groups have access to the file and share permissions determine what type of access the user or group has (full control, modify, read and execute, etc). With standard sharing, a folder can be shared with Everyone who has accounts on the computer or with specific users and groups having accounts on the computer.

Important: a user may be a member of more than one group that has access to a folder. In that case the any denial of a permission takes precedence over the allowing of a permission. That is, the user has the least access granted by the comparison of the share permissions for the groups the user is a member of.

Both methods can be specified at the same time on a Windows 7 Professional computer.

- a) Windows 7 designates network types as either **Public**, **Work**, **Home**, or **Domain**. To make sure your workstation is prepared for sharing on your workgroup, you must be on a Work network. If on a Public network, your sharing will be blocked by default and you will have to configure sharing to occur. To check your network status do the following.
 - i) Check to see if the **Network** icon appears on your desktop. If not, right click somewhere in the middle of your desktop and choose **Personalize > Change** desktop icons and select **Computer** and **Network**. Then click **OK**.
 - ii) Right click on the **Network** icon and select **Properties**. In the **Network and Sharing Center** box, check to see which type of network your connection is designated as. Note that VirtualBox also has a network designated for it.
 - iii) If your network type is Home or Public, change it to **Work** as follows. Click on the **network type** link and in the **Set Network Location**, choose Work network. **DO NOT** select the box **Treat all future networks that I connect to as public....** Then click **Close** in the confirmation box.
 - iv) Back in the Network and Sharing Center box, click **Choose homegroup and sharing options**. In the **Share with other home computers running Windows 7** box, click **Change advanced sharing settings**. Choose the “**Home or Work**” drop down menu.
 - Choose Turn on network discovery.
 - Choose Turn on File and printer sharing
 - Choose Turn off Public folder sharing.

- Media streaming should be off
- Choose Enable file sharing for devices that use 40- or 56-bit encryption.
- Choose Turn on password protected sharing.
- Select Use user accounts and passwords to connect to other computers.

If you made any changes, select Save changes and log off and log back on if necessary.

- b) To see the other computers in your workgroup and any shares on those computers, do the following.
- i) Double click on the **Network** icon on your desktop. The computers in your workgroup will appear. If they do not, you may need to refresh your display by clicking the refresh button next to the path box at the top of the window. By double clicking on a computer icon, you will see available shares on that computer.
- c) You will Create a shared folder and permit Everyone to share it as follows.
- i) Create a folder on your **c:** drive and call it **Shares**.
 - ii) Right click on the folder and select **Share with. You will be able to select “Specific people” or “Advanced sharing.”** If you had Specific people, do step iii); if you had Advanced sharing, do step iv).
 - iii) If you are able to select **Specific people**, in the **File Sharing** box, do this step iii). Otherwise, go to step iv).
 - Look in the Name/Permission level box to see if **Everyone** is there. If not, then do the following.
 - Click the down arrow in the box next to the Add button.
 - Select **Everyone** and then choose Read/Write permission.
 - Then click **Add**.
 - Under the **Permissions** column next to **Everyone**, select **Read/Write**.
 - iv) If you had to choose **Advanced** sharing, do this step, otherwise move to step d) below.
 - Click the **Advanced Sharing** button
 - In the **Advanced Sharing** box, click **Permissions**.
 - If **Everyone** appears in the **Group or user names** box, right click on it once to highlight it. Then select all boxes in the **Allow** column. Then click **OK**.
 - If **Everyone** does not appear, then click **Add > Advanced > Find Now**. From the list that appears, choose **Everyone** and click **OK**. Then back in the **Select Users or Groups** box, click **OK**. Select all boxes in the **Allow** permissions column and click **OK**. In the **Advanced Sharing** box click **OK**. Then click **Close** in the **Shares Properties** box.
- d) View the shares on two other workgroup computers and verify that you can access them.

Creating Local Accounts on Your Workstation

3. You will set up an account on your workstation using the **Computer Management** utility. The account you are supposed to be logged on as at this time is one that is in the local Administrator group. By default, the only account that can create other local accounts is one in the local **Administrators** group. You will add a user account to your workstation and put it in a group. Groups are used to organize users you want to give the same permissions to. In Windows XP, The Power Users group was granted certain default administrative privileges such as the ability to create accounts. Those rights were removed starting with Windows Vista. Nevertheless, a security policy can be created for the Power Users group that includes some administrative privileges.
 - a) Locate the **Administrative Tools** in the **Control Panel** and click on it. Then click on **Computer Management**. The **Computer Management** window will appear.
 - b) Create a new user and put it in the **Administrator User** group by doing the following.
 - i) Double-click **Local Users and Groups**. Double-click the **Users** folder and a list of local users will appear.
 - ii) In the menu bar at the top of the window, click **Action→New User**.
 - iii) In the **Username** field type **testuser1**.
 - iv) In the Password and Confirm Password fields type **testuser1**.
 - v) Uncheck **User Must Change Password** then check the box **User cannot change password**.
 - vi) Click **Close** button. You will return to the window showing the users.
 - vii) Determine how to add the user to the **TelnetClients** group and do that now.
 - **Have your instructor verify your results.**
 - c) You will test your new account by logging out and back in using your new account.
 - i) Log out and log back in locally as **testuser1**.
 - ii) Were you successful?

The Telnet Service

4. Local Administrators can start and stop the Telnet service. The Telnet service allows users with accounts on your computer to log on to your workstation and access files. The Telnet service is not normally installed by Windows by default but it can be added.
 - a) Be sure you are logged in with an administrator-level account.
 - b) Open the **Computer Management** window.
 - c) Double-click on **Services and Applications** and then double-click on **Services**.
 - d) Scroll down until you see **Telnet** service and double-click on it. The **Telnet Properties** window will appear. If the Telnet service is not there, then add it through **Control Panel > Programs and Features > Turn Windows features on or off**. Then select **Telnet Client** and **Telnet Server** and click OK.

- i) Make sure the startup type is **Manual**. This means that upon a system reboot, the service must be started manually.
 - ii) Start the service.
- e) Test each other's Telnet service by logging on to your neighbor's workstation. Note: you will find yourself on your neighbor's C: drive.

Important: Windows 7 Professional can only *serve* one Telnet session at a time.

- i) Open a Command Window and type **telnet address** at the prompt, where **address** is the IP address of your neighbor's workstation.
 - If you receive an error message that the username must be added to the **TelnetClients** group, ask the neighbor to add your username to the **TelnetClients** group on their computer.
- ii) Once logged on to the other computer, you will be able to execute command prompt commands. Navigate to their c: drive and **dir** to display a directory of your neighbor's C: drive contents.
- iii) Do not log out of your neighbor's workstation yet.
- iv) Terminate the telnet session of the person logged on to your computer by stopping the service.
 - **Have your instructor verify that Telnet is stopped.**

Observing Users Connected to Your Shares Using Computer Management

5. You will observe users connected to your shared folders. You will have to access your neighbor's computer. To do that, you log on to *your* computer with an account that is also valid on *your neighbor's* computer. The account your instructor gave you at the beginning of the lab will work.
- a) Log on to your computer using the user name and password given to you at the beginning of the lab session.
 - b) Create a text file called **name.txt**, where name is the name of your computer. Enter the line "Share from *name*" where name is the name of your computer. Save it in the **Shares** folder you created earlier.
 - c) Open the **Computer Management** window and under **System Tools**→**Shared Folders**→**Shares**, double click on **Shares**. Do you see the folder on your computer that you have shared?
 - d) Use the **Network** window to access your neighbor's shared folder and open his/her text file. You and your neighbor need to do this at the same time for the next step to work. Let your instructor know if you cannot see you neighbor's text file.
 - e) In the **Computer Management** window click on **Shared Folders > Sessions**. Do you see your neighbor's session on your computer?
 - f) You will close your neighbor's session.
 - i) Right click on the username in the Sessions window and select **Close Session**.

The System Information Utility

6. The **System Information** utility allows you to view detailed information about your workstation. Click **Start** and in the search box type **msconfig**. In the displayed window select the **Tools** tab and then select **System Information** in the list. Click the **Launch** button. Find out the BIOS version and date running on your computer.

Bios Version and
Date: _____

The Event Viewer

7. Return to the **Computer Management** utility of the **Administrative Tools**. Under **Event Viewer**, choose the **System** event log and describe the most recent **Error** (not a Warning) below.

Event ID, Date, Time: _____

Brief Description: _____

The Windows Security Window and Task Manager

8. The **Task Manager** is a utility providing a number of useful functions. The easiest way to access it is through the **Windows Security** window.
- Type the **Ctrl-Alt-Del** keys at the same time to bring up the **Windows Security** window.
 - What does **Lock Computer** do?
 - Return to the **Windows Security** window and press **Task Manager**.
 - Click on the **Applications** tab. All running applications will appear in the list. Double click on **My Computer** on your desktop and observe the **Applications** list.
 - Click on the **Processes** tab. All running processes will appear in the list. Which process uses the most memory? Which one has used the most cumulative CPU time?

Process with most memory: _____

Process using most cumulative CPU time: _____

- Click on the **Performance** tab. You will see graphs of CPU time and memory usage.
- Click on the **Resource Monitor** button and you will see more statistics you can monitor. Under the CPU tab, determine which application is using the greatest amount of Threads. By clicking the column heading you can change the display order.

Application with most Threads: _____

Workstation Performance

9. The workstation performance monitoring tool is part of the **Administrative Tools**. You can use it to display graphs of various workstation performance parameters.
- Start the **Performance** tool.

- b) In the graph panel of the **Performance** window select click the + button. The **Add Counters** box will appear.
- c) Add counters to monitor the percentage of hard disk time, the percentage of processor time, and the IPv4 datagrams receive per second.
 - **Have your instructor verify your results.**
- d) Although you will not do this here, you can store customized performance monitoring panels like the one you just created for recall at any time. This is useful because if you monitor more than a few counters at a time, your graph panel gets cluttered.

Security Policy

10. The Local Security Policy tool is included in Administrative Tools. It is used to change the following parameters, among others.

- Account Policies, including password age and password history
- Local Policies, including user rights assignments, security options, and audit policy

To change these parameters you must be a local Administrator or a Domain Administrator. Having an account in the Administrators group is not sufficient. If time permits, your instructor will demonstrate this capability.

Profiles

11. User profiles are stored for each account so that when a user logs on, he/she has custom settings restored, such as desktop color. The profiles can be local or roaming. Local profiles are stored on each computer and are available when you log on to that computer. Roaming profiles are stored on the Domain Controller server and are available any time you log on to the domain. You can choose between local and roaming if you are logged on to the domain. If you are logged on locally, you do not have access to the roaming profile.

Also, accounts in the Administrator group can copy and delete profile files of any other child user account on the computer. When a profile is deleted, the user receives the default profile when they next log on. Their settings are then automatically stored in a new profile file.

- a) Open the **System Properties** window by right-clicking on **My Computer > Properties > Advanced system settings**. Under **User Profiles** select **Settings**.
- b) Identify whether you have a local or roaming profile.

Wrap Up

- 12. a) Remove all shared folders you created.
- b) Remove all user accounts you created.
- c) **Have your instructor verify your results.**

Questions

- 1. What local user account group level(s) is required to set up a local workstation account?

2. What is the main advantage of placing user accounts into groups?
3. When you set up the **testuser1** account according to the procedure you were instructed to follow, can **testuser1** change its own account password? Why or why not?
4. Why is it useful to have a telnet server running on your workstation? What is a disadvantage?
5. What is the value of the Lock Workstation function?

Report

Each team students should analyze their data and prepare one brief, concise report. Compare and contrast the differences you saw in the permissions granted to the two domain accounts you used. A table may be useful for the comparison. Make meaningful conclusions about what you learned.

References

W. Stanek, *Windows 7 Administrator's Pocket Consultant*, Redmond, WA, Microsoft Press, 2010.