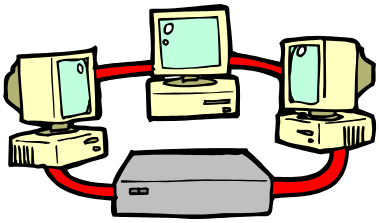
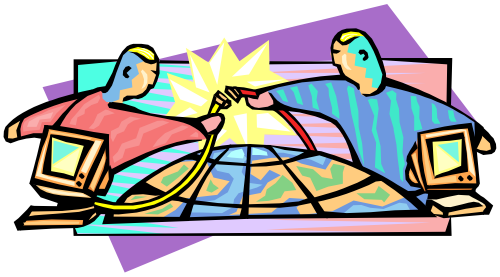


Mobile Network Training Lab

Making the connection for the Small Office and Home Network



Mobile Network Training Lab

Introduction

The past several years has seen great jumps in the computer industry. Machines have become smaller, more powerful and less expensive. This allows the computer to move from being a luxury item to a standard tool of business. As businesses have seen the number of computers in the office rise, the necessity for sharing data and peripheral devices between these computers has also increased. Unfortunately computer networks have been out of reach for the small office due to financial constraints or lack of networking knowledge.

Advancements in the past couple of years have placed the network within reach of the small office and even the home. This document will cover how to setup a small three-computer network with file and print sharing. Once this is accomplished, a fourth computer will be added along with Internet access to the other three machines.

Designed around Faded Treasures, a fictitious business, the lab includes four scenarios that give this lab a real life problem to be solved.

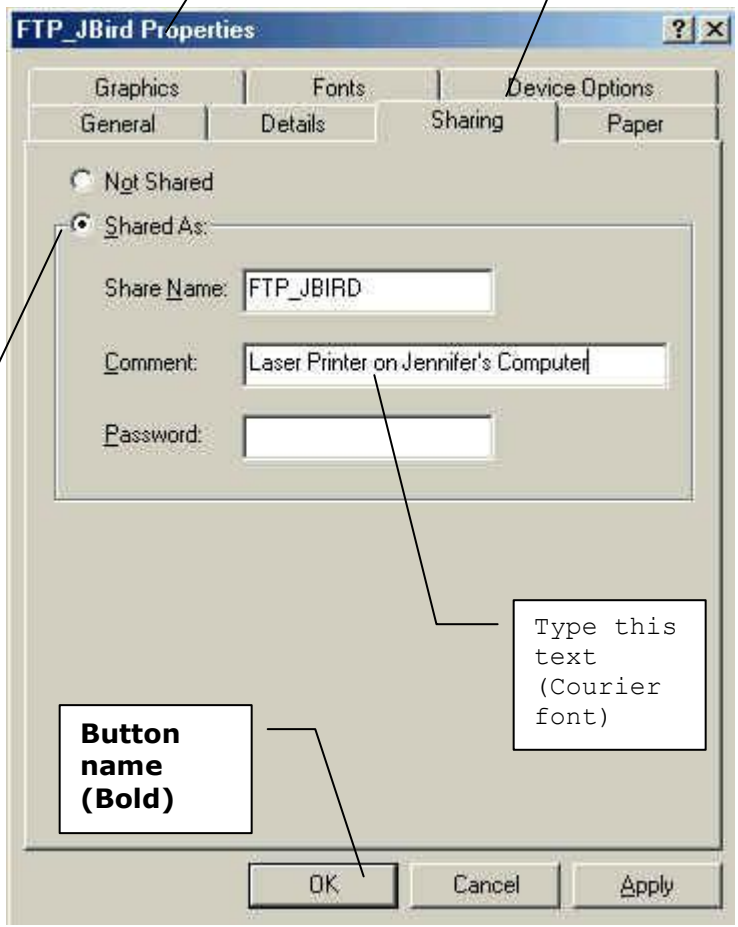
Table of Contents

Conventions Used in the Lab

Below is an example from this document.

FTP_JBird Properties windows
Sharing Tab

1. Select the Radio button next to *Shared As*:
2. In the comment filed, type: `Laser Printer on Jennifer's Computer`
3. Click **Apply**
4. Click **Ok**



Mobile Network Training Lab Equipment

Equipment:

- 4 Dell Optiplex GX1 Workstations
- 3 Dell 15" Monitors
- 4 Keyboard
- 4 Mice
- 7 Power Cords

- 1 3Com 4 Port Hub
- 1 Hub Power Supply Cable
- 5 10' Category 5 Ethernet Cables

- 1 Printer HP IIP
- 1 Power Cord
- 1 Printer cable

- 4 Bootable Restore Cd's
  - Workstation 1
  - Workstation 2
  - Workstation 3
  - Server

- 2 Power Strips

Preinstalled Software:

Microsoft Windows 2000 Professional
Microsoft Windows Millennium
Microsoft Word 2000
Norton Antivirus

Base Machine Configuration:

Office File Server
- Windows 2000 Professional
- Norton Antivirus

Workstation 1
- Windows ME
- Word 2000
- Norton Antivirus

Workstation 2
- Windows ME
- Word 2000
- Norton Antivirus

Workstation 3
- Windows ME
- Word 2000
- Norton Antivirus

Scenario One:

Faded Treasures, an up scale antique dealer located in Snowflake Arizona employ's a full time staff of three.

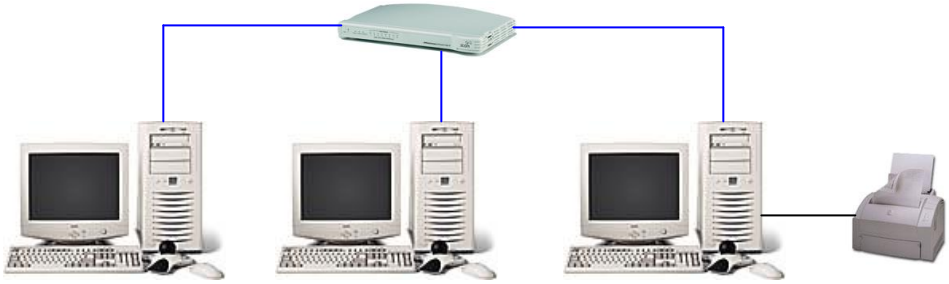
- Victoria Allen (owner)
- Russell Rhodes (sales)
- Jennifer Bird (secretary)

Currently, each person has a personal computer workstation where they save their data to the local hard drive. Due to the high cost of supplies, Victoria chose to purchase one high quality laser printer rather than individual ink jet printers. However, this printer is attached to Jennifer's workstation. The only way to print a document is to transfer the file to Jennifer's workstation via a floppy disk. This configuration proved to be extremely disruptive to Jennifer's workday. Victoria noticed this disruption and directed Jennifer find a more productive solution.

Jennifer began searching for a solution and discovered the Peer-to-Peer Network capabilities of Windows Millennium.

Assignment 1:

Your team will use Workstations 1 through 3 to configure a Peer-to-Peer network that contains one shared printer. Each workstation will be able to print to the printer. Use the following instructions to accomplish this assignment.



What is a computer network?

In its simplest form, a computer network is a compilation of equipment connected to one another for the purpose of communicating and sharing information (data). In a typical network, two or more computers will share files, applications, CD Rom drives, printers, scanners, etc, including an Internet connection. A series of cables connect each computer to the network while peripherals may be directly connected to the network or shared through a computer.

While some computer users feel a network is only necessary in a large organization, other users have seen the validity of the small office or home network. Oddly enough, the rational for a small network is similar to a large organization. There is an overwhelming desire to share information between computers and users. A single computer connected to the internet is no longer acceptable as the phrase "Call Me" has been replaced with "Email Me".

Step One: Setting up the Workstation

Materials Needed: Your team will need the equipment listed on the equipment listed on page 4 with the exception of the workstation server and the restore CD's.
Directions: Follow the instructions listed below to setup each workstation.

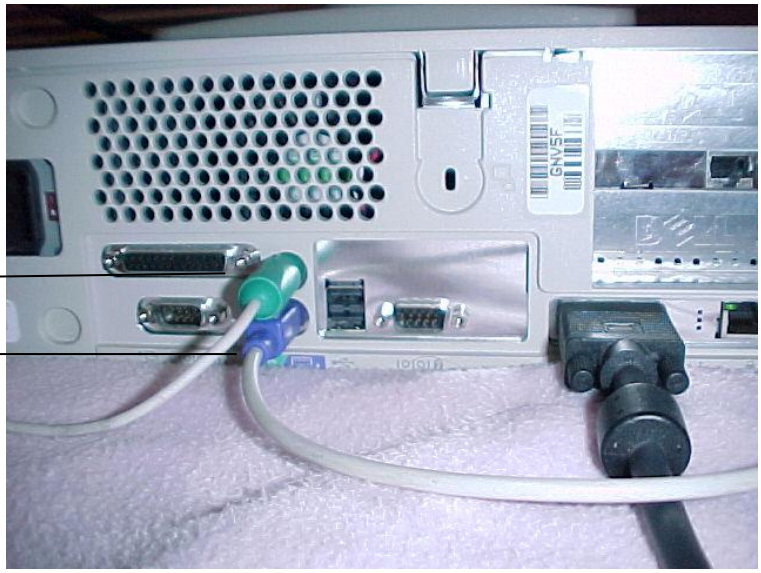
1. Assemble all materials listed on page 4

Shown right…
- Computer
- Monitor
- Keyboard
- Mouse

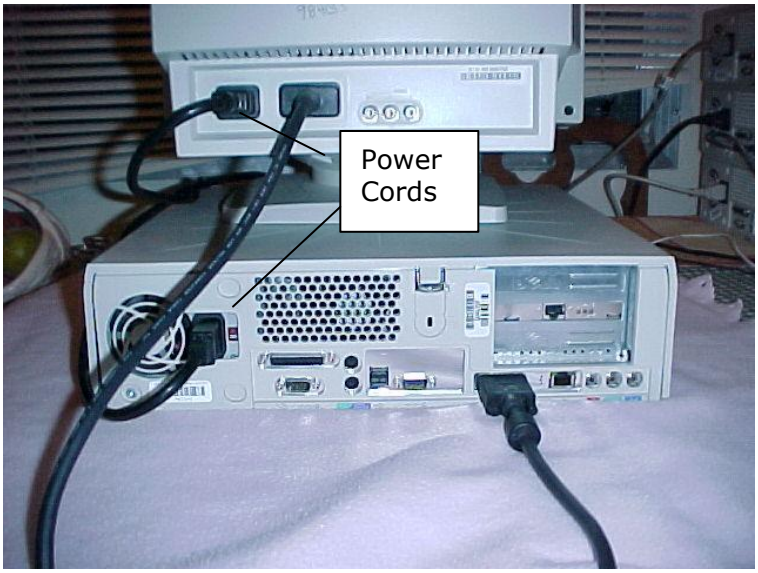
2. Place monitor on to of computer then plug the monitor into the monitor port

3. Plug the mouse and keyboard into the appropriate ports.

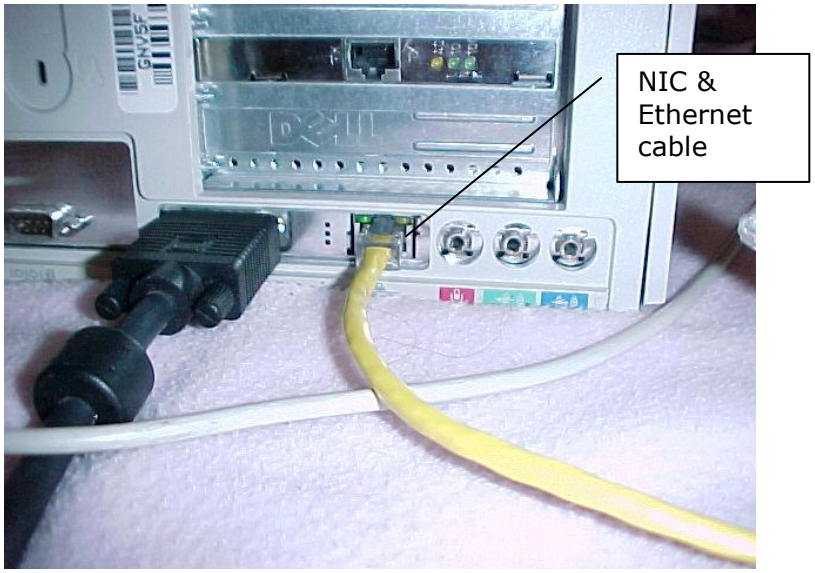
Note: Mouse top, keyboard bottom



4. Plug in the power cord for the monitor and computer
5. Attach the other end of the cords to the power strip and plug the power strip into the wall. (The power strip should be in the OFF position.



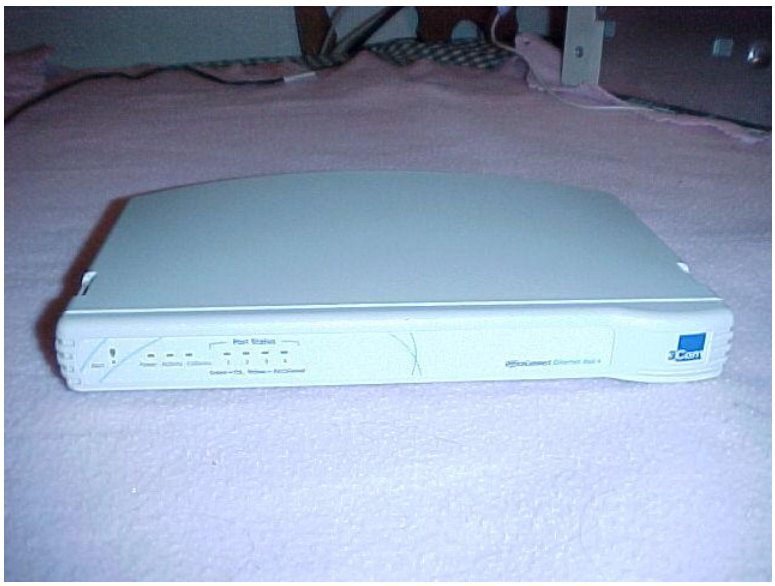
6. Plug the Ethernet cable into the Network Interface Card (NIC).



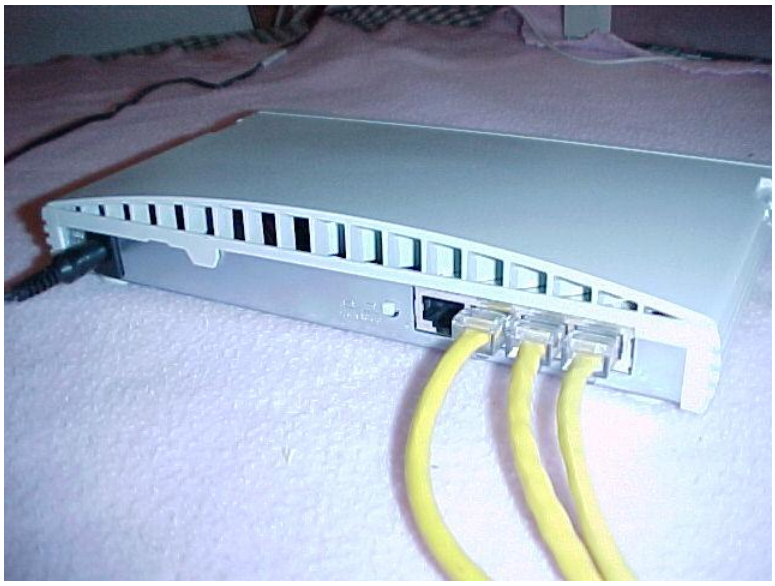
Step Two: Connecting Network Cables

Shown 3Com 4 port hub

Materials Needed: 3 Ethernet cables
Directions: Follow the instructions listed below to connect the workstations.



1. Plug the power cord into the hub
2. Attach the other end of the cords to the power strip and plug the power strip into the wall. (The power strip should be in the OFF position.
3. Plug the three Ethernet cables into the hub as shown right.



•

Step Three: Power up and Log on.

1. Press the Power button located on the front of the machine.

Note: The top button will emit light from the center when the machine is running.

Directions: Follow the instructions listed below.
These steps will need to be completed on each workstation.
Note: This does not include the Server.

Each workstation has two stickers.
One will read Workstation# with the username and password located on the front of the machine. The second will read the name Victoria, Russell or Jennifer.

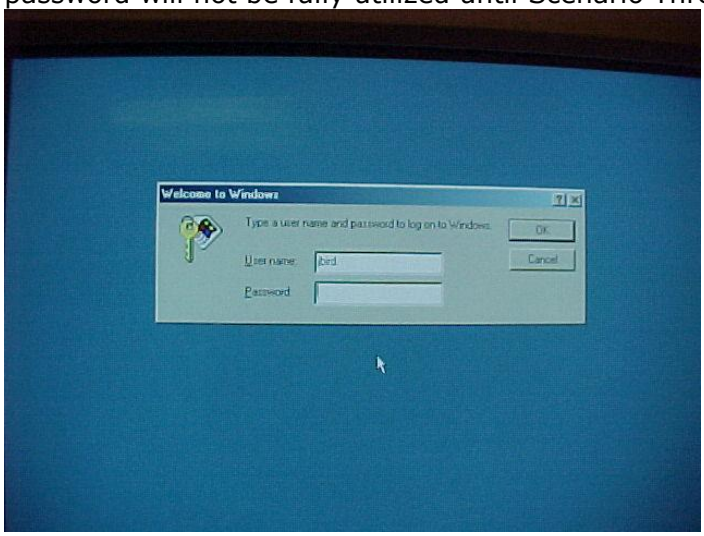
Enter Windows Password window:

2. Type the persons `User ID` shown on the sticker in the *User ID field*.
3. Type the person's `password` in the *Password field*.
4. Click **OK**

READ

You will be logging onto the computer. By logging onto the computer, you are telling the computer who you are via your user name. Your password is for security.

Once the computer has fully booted, you will be required to type in a user ID and Password. This user ID and password identifies you to the network. In reality, this user ID and password will not be fully utilized until Scenario Three.



Change the background image on the workstation:

5. Place the cursor in a blank area of the screen.
6. Click the right mouse button and choose **Properties**.

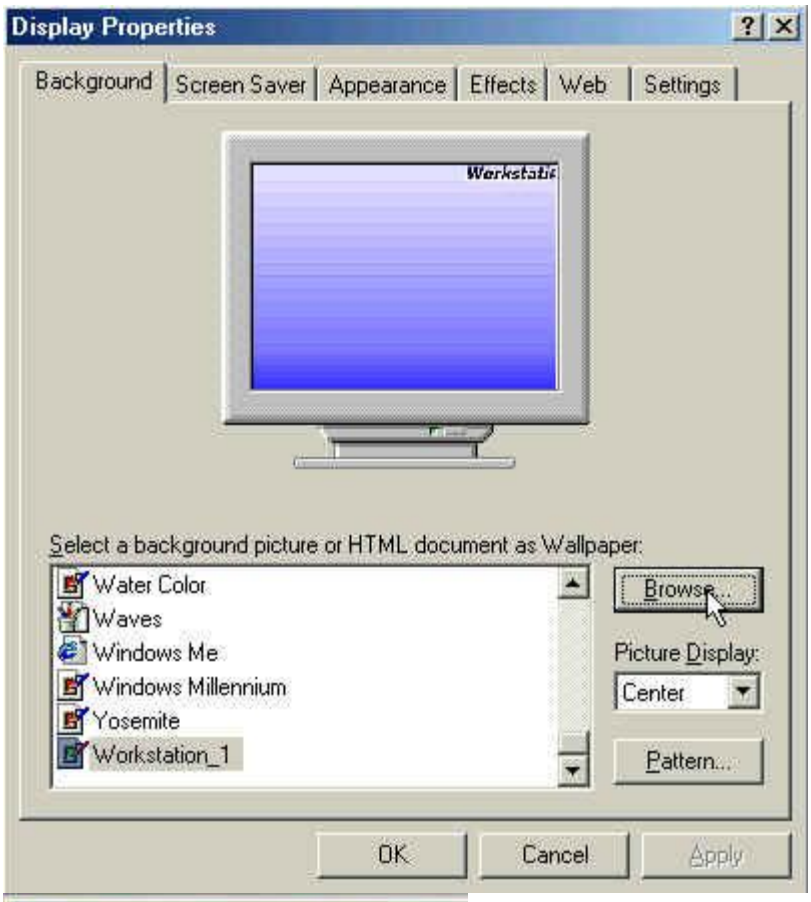
Read

You will be changing the background on the screen. This really has nothing to do with setting up a network. However, it will make it easier to tell what computer you are working on.

Changing the background has nothing to do with creating a network; however it will make it easier to tell which computer you are working on.

Display Properties window

7. Click the **Browse** button.

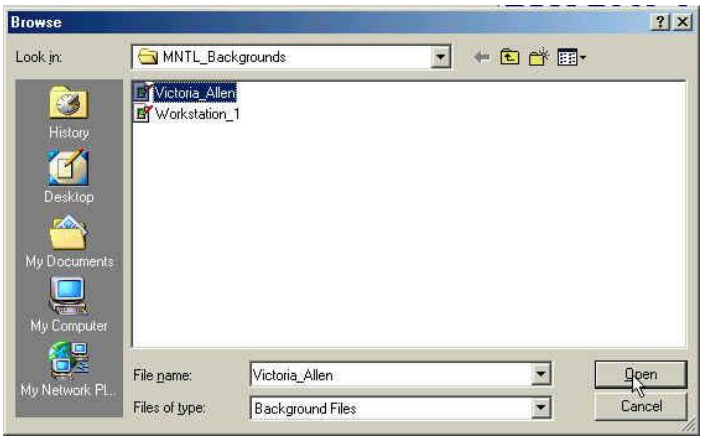


Browse window

8. Select the name associated with your workstation.
   Workstation 1 = Victoria Allen
   Workstation 2 = Russell Rhodes
   Workstation 3 = Jennifer Bird

Browse window

9. Click the **Open** button. The window will close.
10. Click the **Apply** button.
11. Click the **OK** button.



Step Four: Configuring the IP Address & Workgroup

Directions: Follow the instructions listed below to configure the Internet Protocol Address for each workstation.

Read

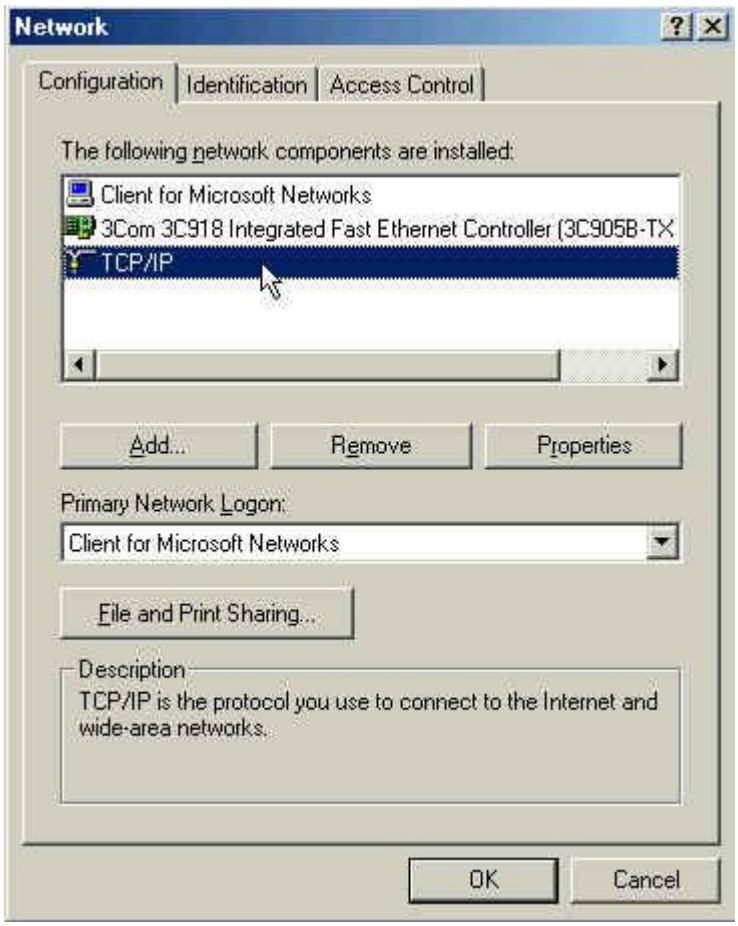
You will be setting the computer with an IP address. Simply stated, this IP address is similar to the address of you home. An address is needed for people or information to find your home. The same is true for a computer network. For additional information, see appendix A

Desktop

1. Place your mouse over the My Network Places icon.
2. Click the right mouse button choose **Properties**.

Network window
Configuration Tab

3. Select *TCP/IP*
4. Click the **Properties** button.



TCP/IP Properties window

IP Address tab

5. Select the radio button to the right of Specify an *IP address*. (The IP Address and Subnet Mask field will activate)
6. Type the following information in the IP Address box

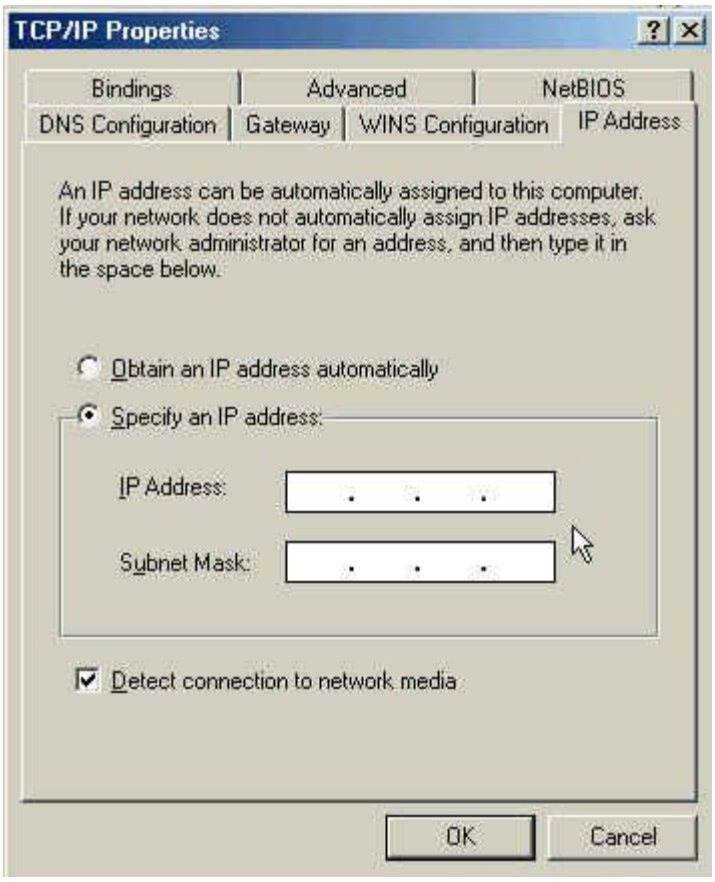
   Workstation 1:
   `IP Address: 192.168.0.11`
   `Subnet Mask: 255.255.255.0`

   Workstation 2:
   `IP Address: 192.168.0.12`
   `Subnet Mask: 255.255.255.0`

   Workstation 3:
   `IP Address: 192.168.0.13`
   `Subnet Mask: 255.255.255.0`
7. Click **OK** to close the **TCP/IP window**.
8. Click **OK** to close the Network window.

System Settings Change window:

9. You will now be required to restart you computer. Click the **Yes** button.



Step Five: Setting up File and printer sharing for Microsoft Networks

Directions: Follow the instructions listed below on workstation 3 only.

Read

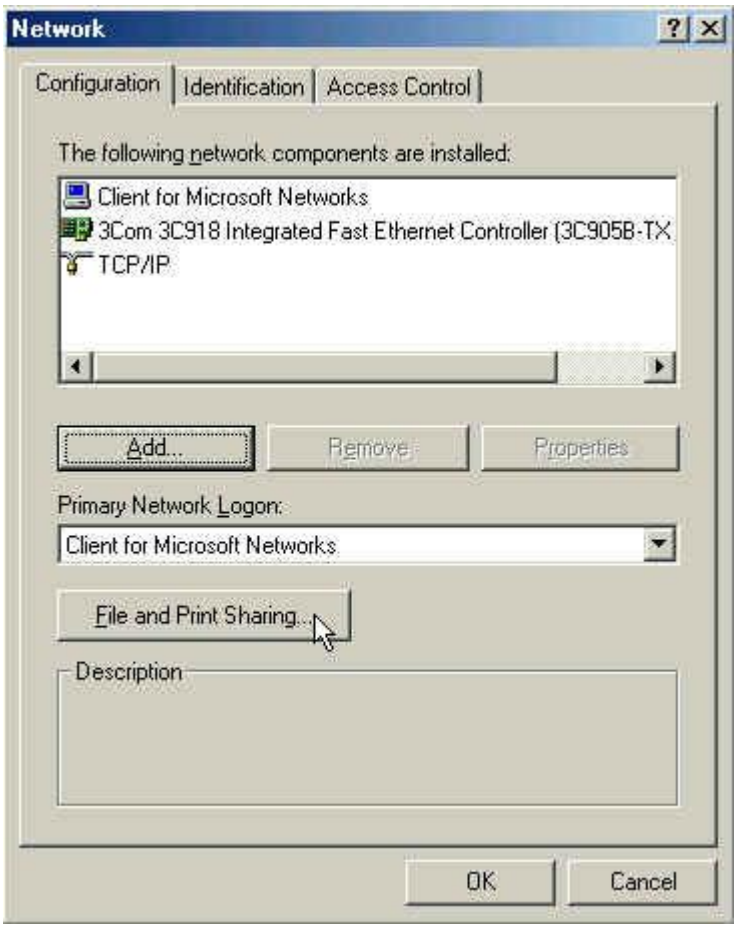
You will be setting up File and Printer sharing on the workstation. This will allow other users on the network to access data (files) on the workstation. Additionally, a printer attached on one workstation may be accessed from another workstation.

Desktop

1. Place your mouse over the My Network Places icon.
2. Click the right mouse button choose **Properties**.

Network window
Configuration Tab

3. Click the **File and Print Sharing…** button



File and Print Sharing window

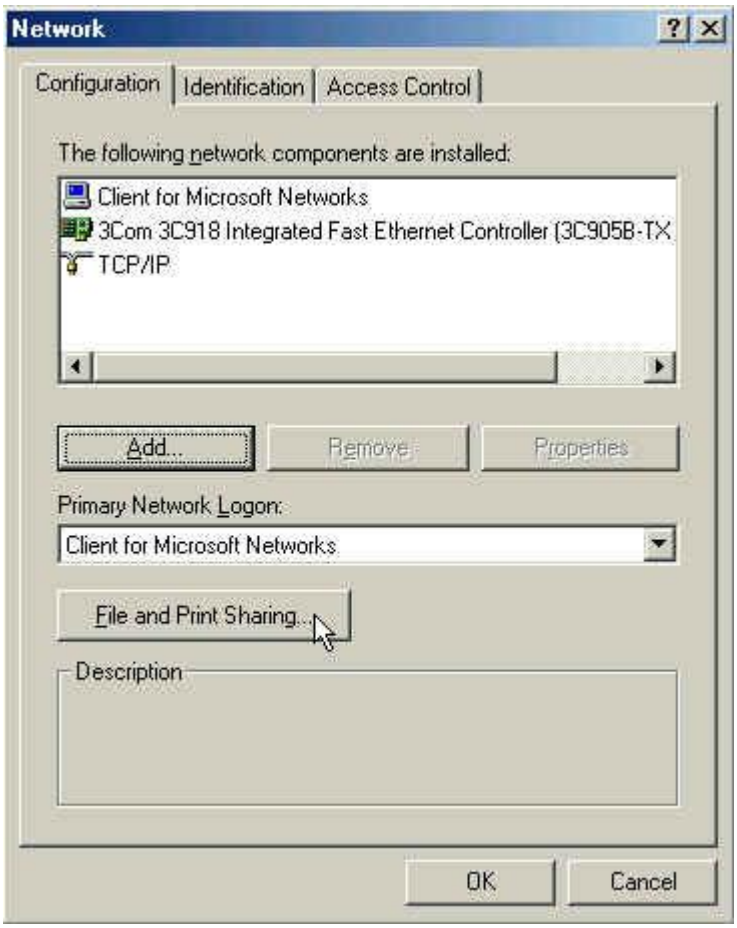
4. Place a check mark in the check box next to:
   I want to be able to give others access to my files.
   &
   I want to be able to allow others to print to my printer(s).
5. Click **OK**

Network window
Configuration Tab

6. Click **Ok**

Note: Windows will install the files necessary for File and Print sharing. When these files are installed, the computer will ask you to restart. You must click Yes.

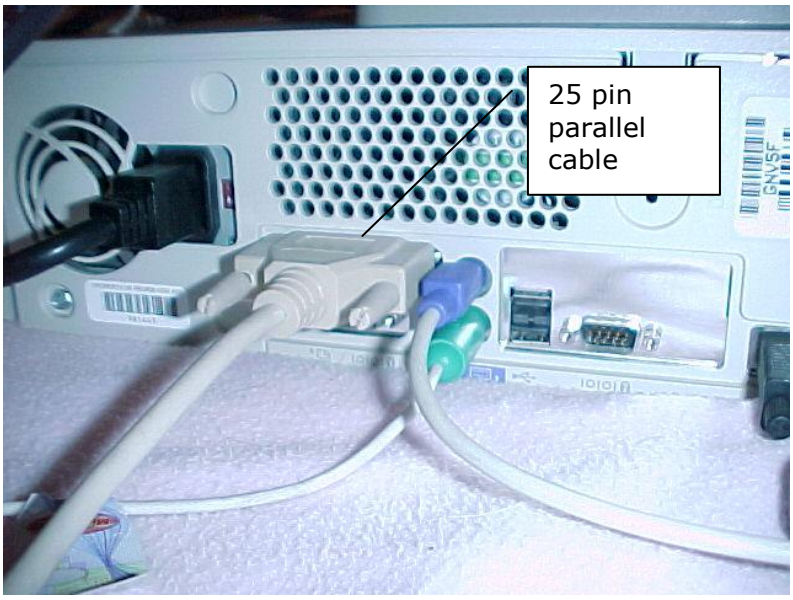
7. Repeat this process for the other two workstations. We will not be using Print Sharing on the other two machines. However, File Sharing will be utilized in a later activity.



Directions: Follow the instructions listed below.

Step Six: Setting up a Local Printer

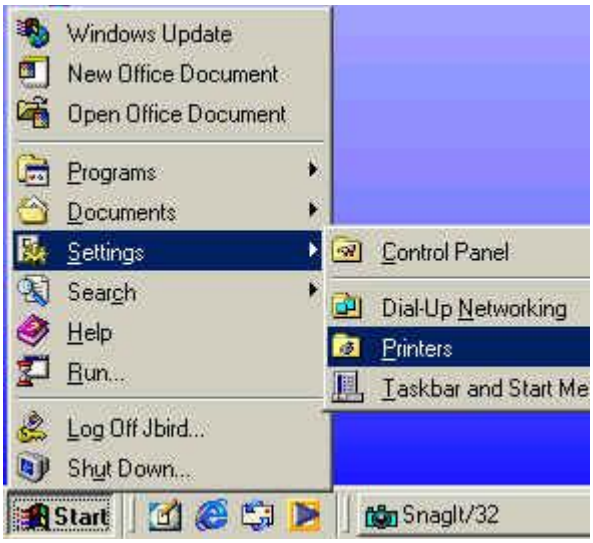
8. Place the 25 pin side of the parallel cable into the workstation as shown right.



9. Plug the other end of the parallel cable into the printer as shown.
10. Attach the power cable to the printer and the power strip.
11. Power the printer on and add paper.

Desktop

1. Click **Start**
   Choose **Settings**
   Select **Printers**



Printers window

2. Double Click the Add Printer icon.

Add Printer Wizard

3. Click **Next**

Add Printer Wizard

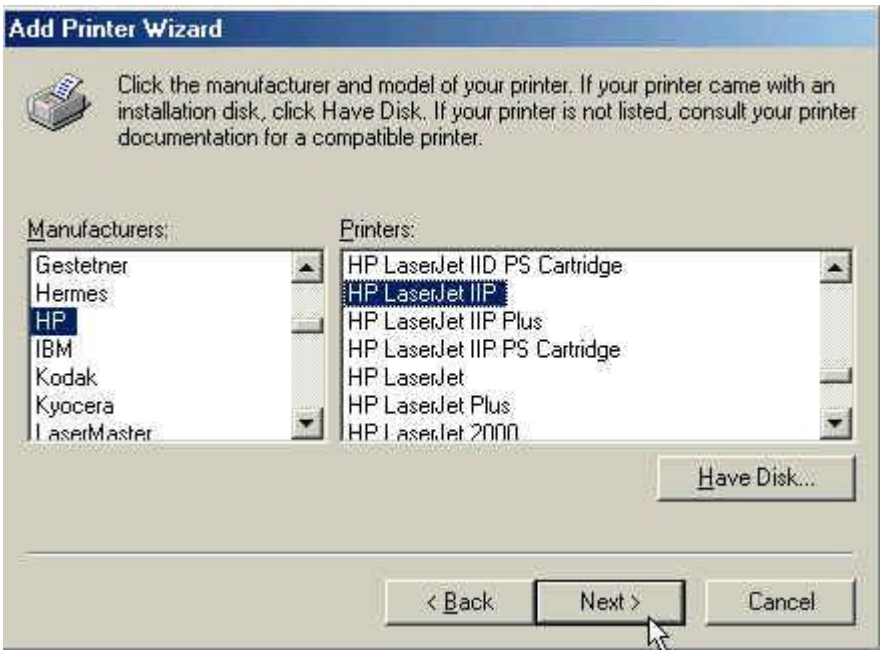
4. Make sure the radio button for *Local printer* is selected. Click **Next**

Add Printer Wizard

5. Scroll the *Manufacturers filed* (left side of window) to locate the manufacture of your printer. Select your printers manufacture.
6. Scroll the *Printers field*. Select your printer.
7. Click **Next**

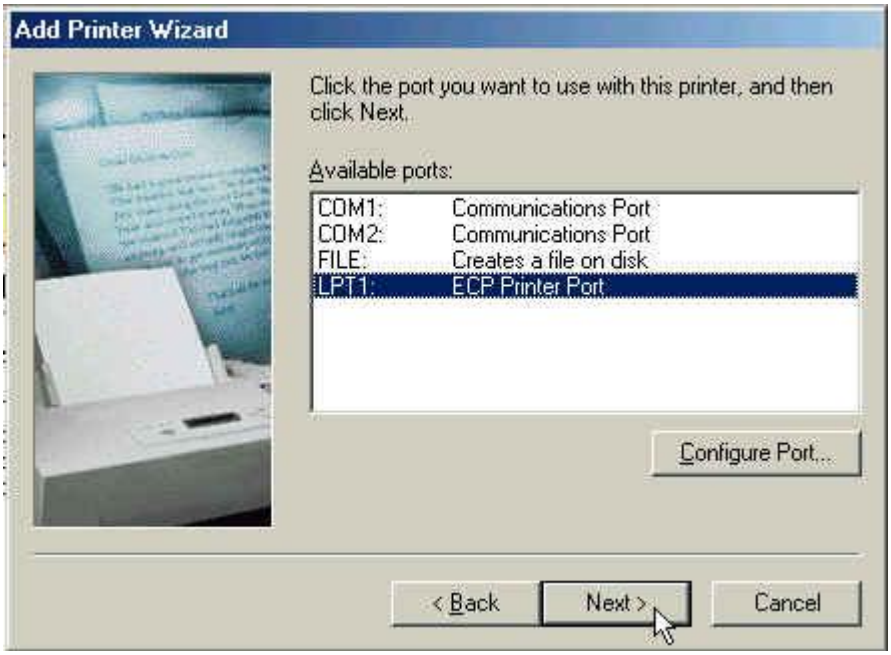
Note: You will need to look at the printer you were supplied with.

This example shows a HP LaserJet IIP



Add Printer Wizard

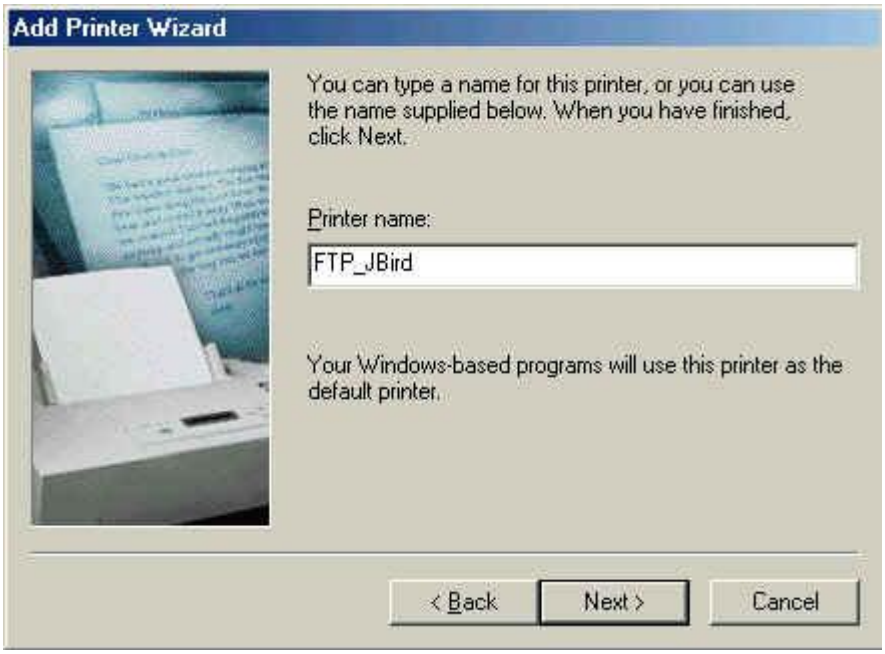
8. *Available ports fields* Select LPT1
9. Click **Next**



Add Printer Wizard

10. Printer Name
    Type `FTP_JBird`
11. Click **Next**

Note: By default, windows will name the printer the same as the brand and model. If a company has several of the same printers, this would become quite confusing. This is the reason for changing the name above.

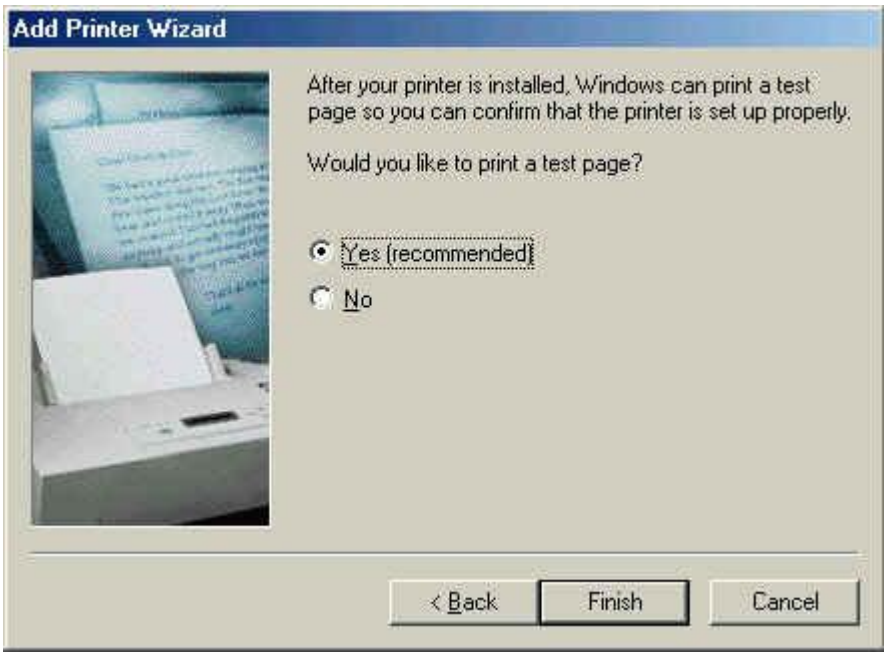


Add Printer Wizard

Would you like to print a test page?

12. Make sure the radio button for *Yes (recommended)* is selected.
    Click **Finish**
13. Windows will begin copying the necessary files to the computer.

Note: Printing a test page will always ensure the printer is installed and functioning correctly.

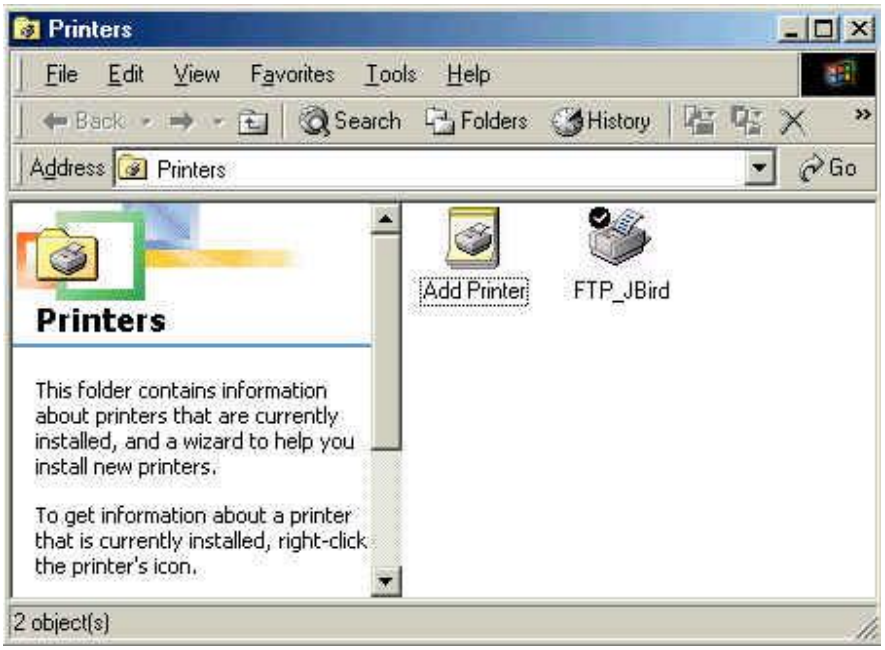


Test Page Alert window

14. Click **Yes** to close the window once the test page as successfully printer.

Printers window

15. The new printer icon will now be displayed in the Printer folder.
16. Do not close the Printer Window



Step Seven: Sharing a Printer

Directions: Follow the instructions listed below.

Read

Why share a printer? At this point, a printer has been attached to the workstation. Sharing this printer will allow other computers on this network to print to this printer. It is no longer necessary to have one printer for each computer when using a network with File and Printer Sharing enabled.

The students working on Workstation 2 ➔ Russell Rhodes and Workstation 3 ➔ Jennifer Bird will each need to complete this exercise.

Printer window

5. Right click on the *FTP_JBird* printer icon.
6. Click **Sharing**

FTP_JBird Properties windows
Sharing Tab

7. Select the Radio button next to *Shared As*:
8. In the comment filed, type: `Laser Printer on Jennifer's Computer`
9. Click **Apply**
10. Click **Ok**

***FTP_JBird* Properties windows**

The FTP_JBird printer will now show a hand under the printer icon. This indicates the printer is shared.

11. Close the Printer window.

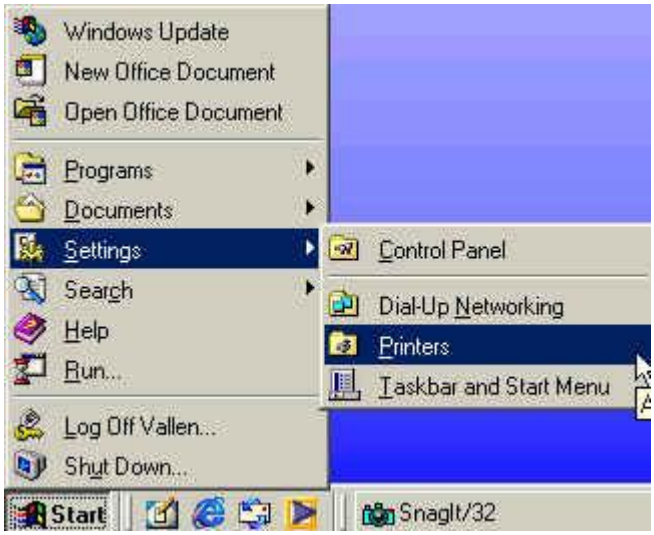
Step Eight: Adding a Shared Printer to a Workstation

Directions: Follow the instructions listed below.

You will be connecting the other workstations to the shared printer on workstation 3. This will allow the other two workstations to print.

Desktop

1. Click **Start**, choose setting, click **Printers**

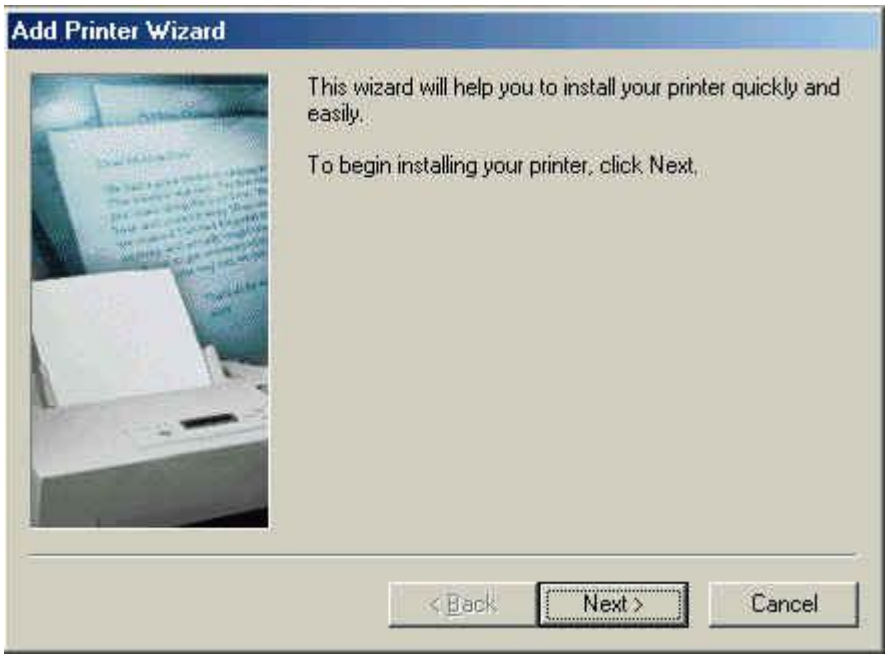


Printers window

2. Double Click Add Printer

Add Printer Wizard window

3. Click **Next**

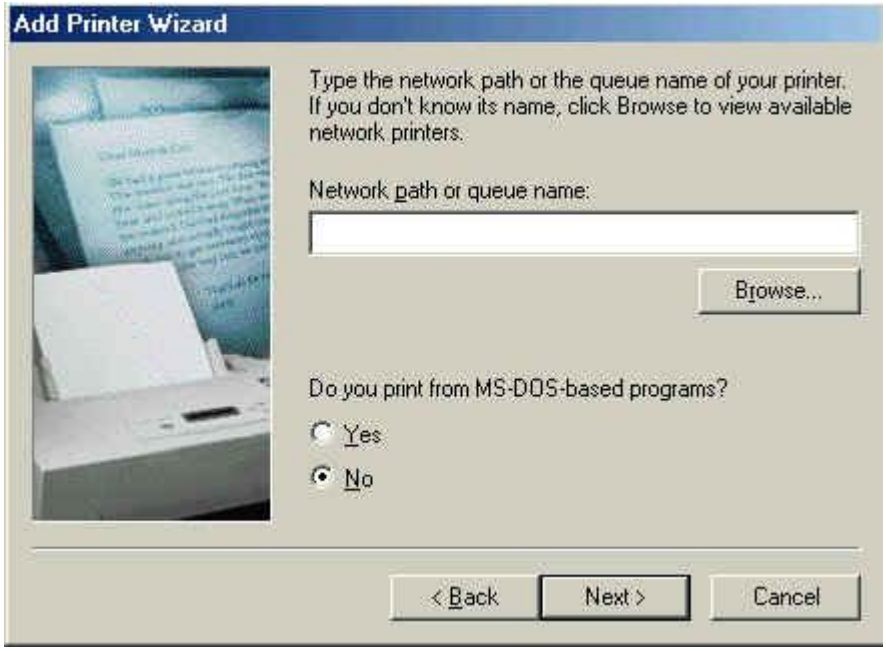


Add Printer Wizard window

4. Make sure the radio button for *Network printer* is selected. Click **Next**

Add Printer Wizard window

5. Click the **Browse** button.



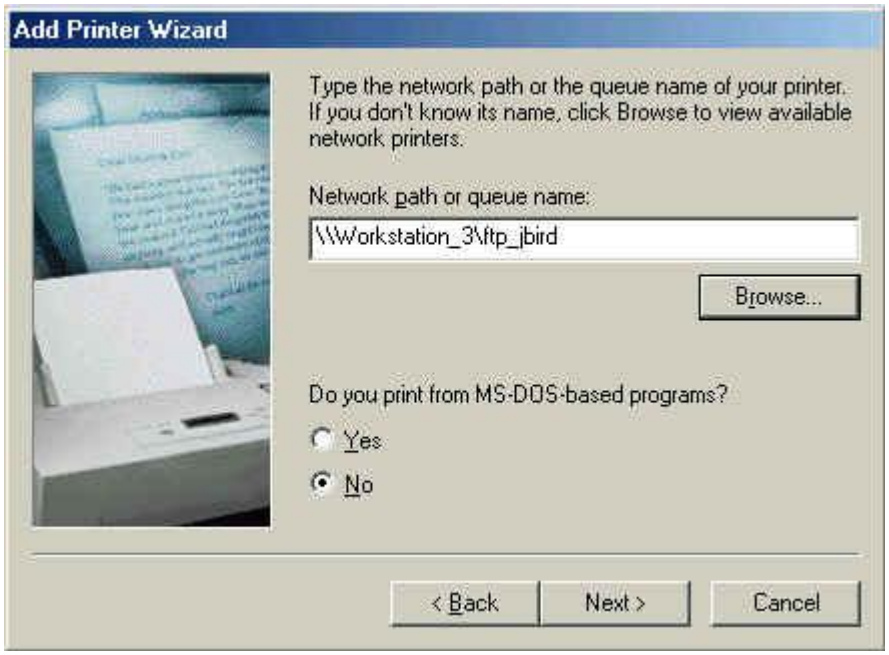
Browse for Printer window

6. Expand the view of the network by clicking on the plus (+) to the left of Entire Network.
7. Click Workgroup
8. Click Workstation_3
9. Click ftp_jbird
10. Click **OK**

Add Printer Wizard window

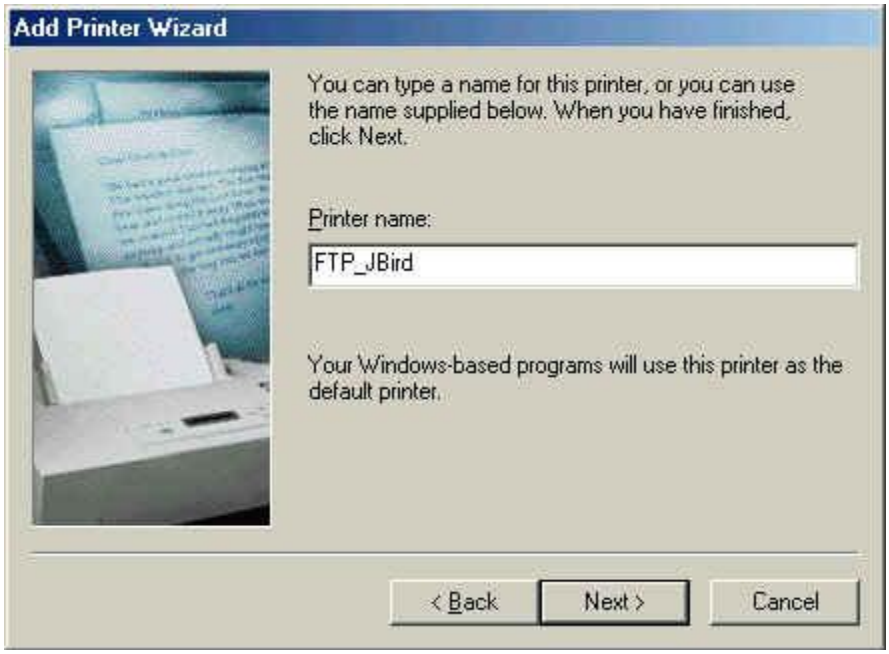
11. Click **Next**

Notice the information in the Network path or queue name field.



Add Printer Wizard window

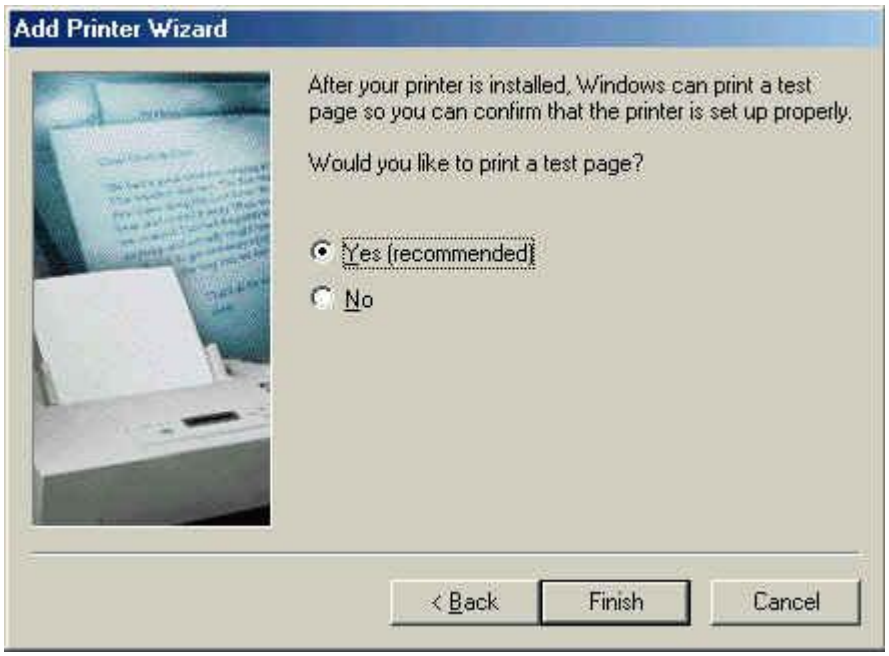
12. Type `FTP_JBird` in the *Printer name* field.
13. Click **Next**



Add Printer Wizard window
Would you like to print a test page?

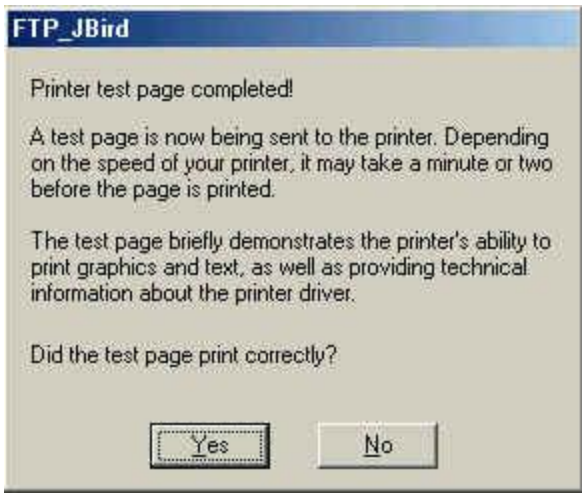
14. Make sure the radio button for *Yes* is selected.
    Click **Finish**

    Windows will begin copying the necessary files to the computer.



Test Page Alert window

17. Click **Yes** to close the window once the test page as successfully printer.



Printers window

The FTP_JBird printer will now be displayed

18. Close the **Printer window**.

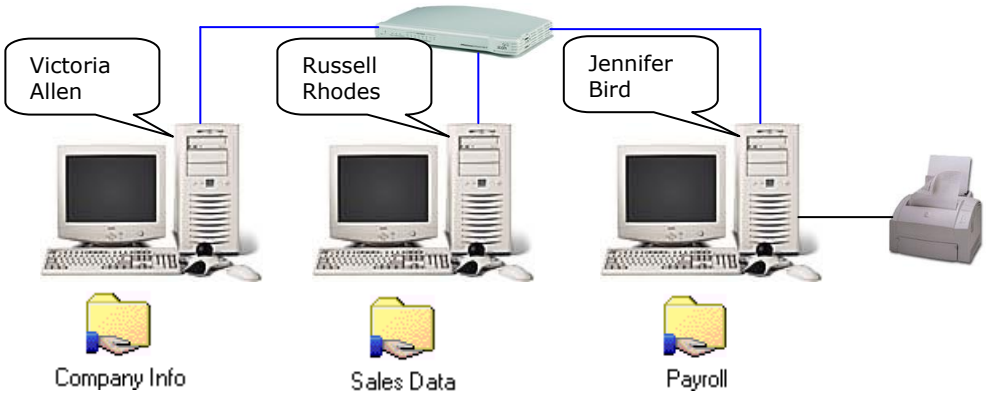
Scenario Two:

Two months have passed; everyone at Faded Treasures has been enjoying the fact they are able to print directly from their workstation. However, they still have a couple situations that cause the staff some aggravation. Each member of Faded Treasures keeps data on his or her machine. For example: Victoria keeps any company information on her workstation. Russell keeps all the sales data on his machine and Jennifer keeps the payroll information on her workstation. Additionally, they all keep other work related data on their workstation. While it is not necessary for every person to access all the information on each other's computer, it would be nice to for Victoria to have access to the Sales data on Russell's workstation. She would also like to have access to the payroll information on Jennifer's workstation. Finally, she would like Russell and Jennifer to have access to the company information on her workstation.

Victoria asked Jennifer to research this situation to see if there was a way for files to be shared between themselves.

Assignment 2:

Your team will use Workstations 1 through 3 configured as a Peer-to-Peer network to create the file shares described in the scenario above and displayed below. Use the following instructions to accomplish this assignment.



What is File Sharing?

File sharing is the ability to allow more than one person access a file. While this is possible through the use of a floppy disk or via email, the term file sharing generally means, sharing files in a network. File sharing on a network allows a number of people to read, write, copy or print and file based on the level of access given to the user.

Step One: Creating a Shared Folder

Create the following folders on the appropriate workstations. Note: Each workstation will require a slightly different setup. Pay close attention to the next set of instructions. Be certain to read each step carefully.
Workstation 1 ➔ Company Info
Workstation 2 ➔ Sales Data
Workstation 3 ➔ Payroll

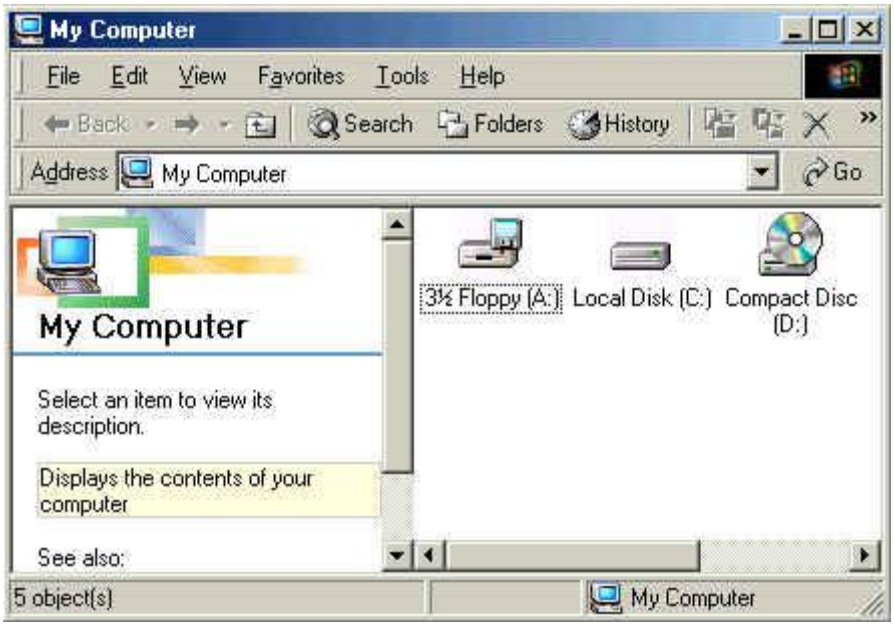
Desktop

1. Double Click My Computer

Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3

My Computer window

2. Double Click Local Disk (C:)

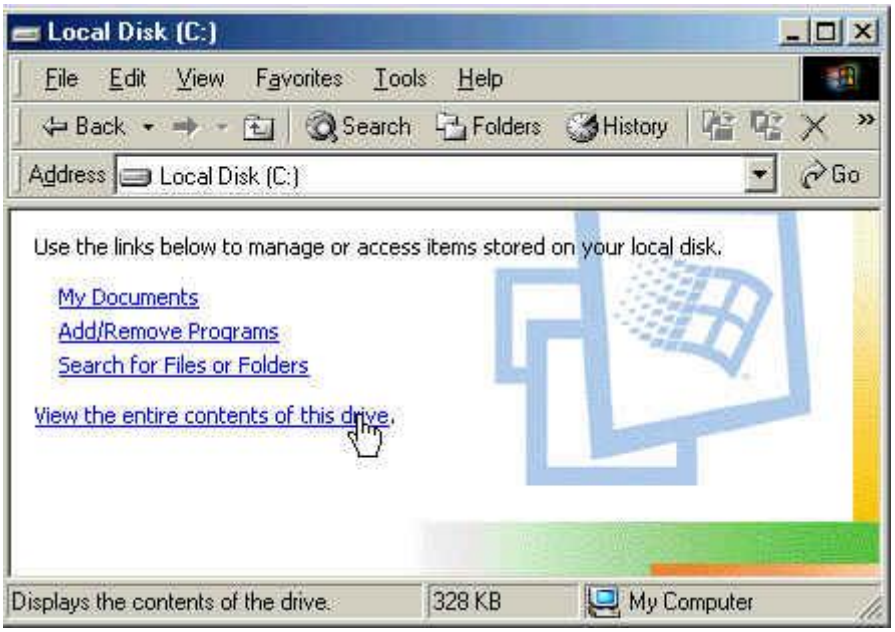


Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3

Local Disk (C:) window

3. Click on **View the entire contents of this drive.**

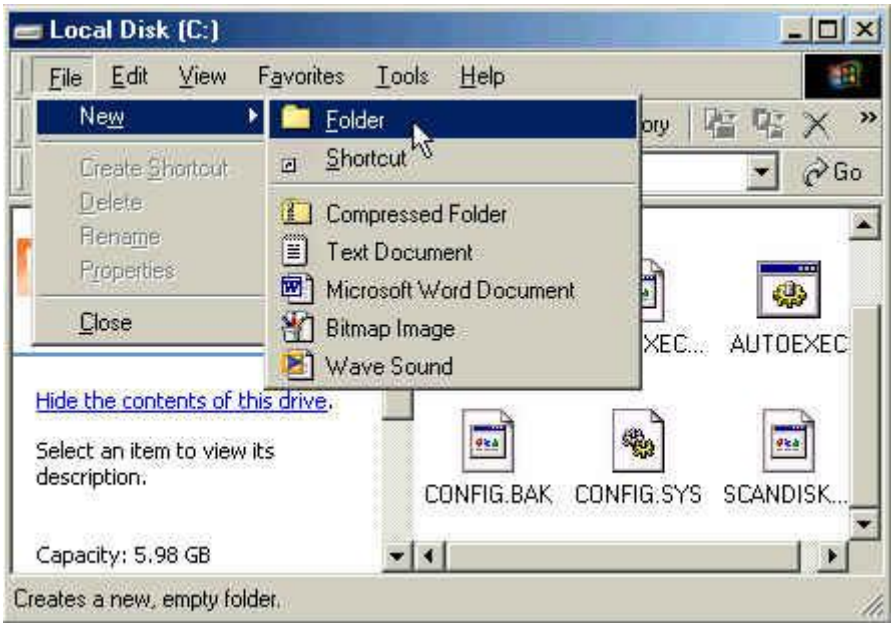
Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3



Local Disk (C:) window

4. Click **File**
   Choose **New**
   Click Folder

Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3



Local Disk (C:) window

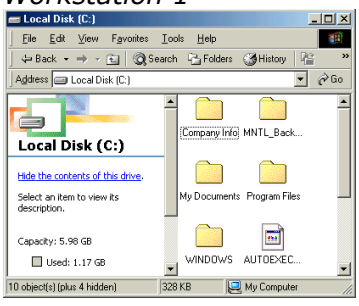
The new folder will be created and in rename mode. If the cursor is not blinking in the name field, press the F2 key.

5. Type the text shown to the right. ➔ ➔
6. Press the Enter Key on the keyboard

Workstation 1 ➔ `Company Info`
Workstation 2 ➔ `Sales Data`
Workstation 3 ➔ `Payroll`

Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3

Workstation 1



Workstation 2

Workstation 3

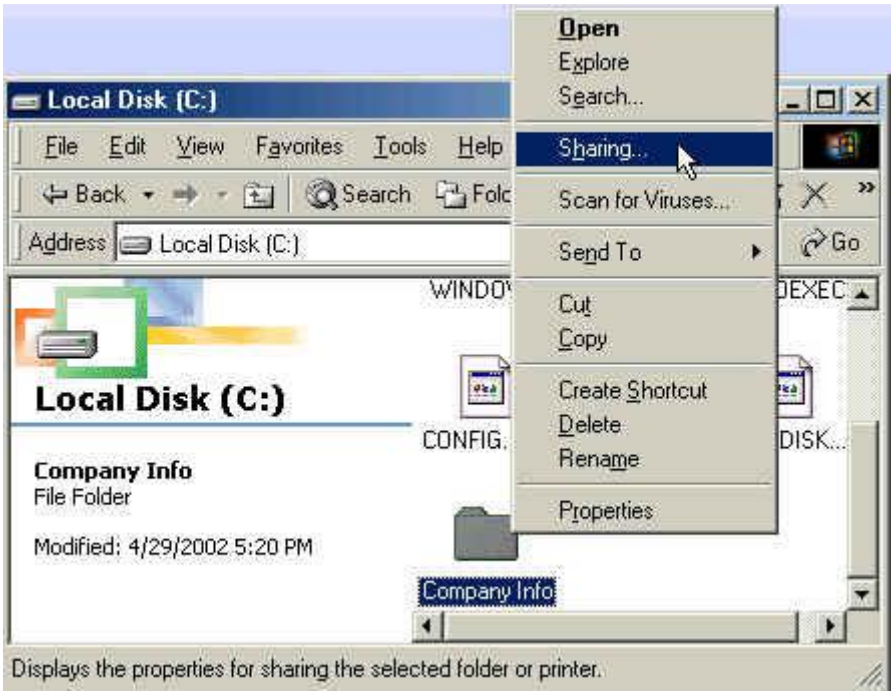
This needs to be completed

Copy data into the folders

Local Disk (C:) window

7. Right click the folder you just create on your workstation. Choose **Sharing**.

Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3

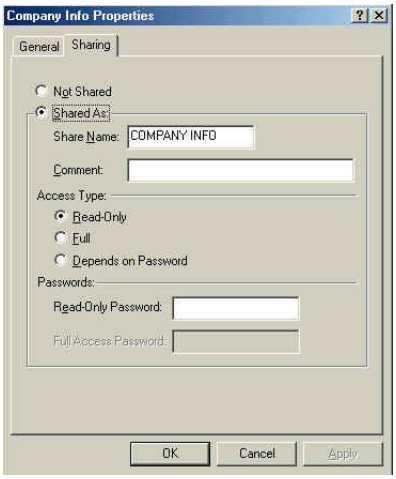


***(Folder Name)* Properties window**

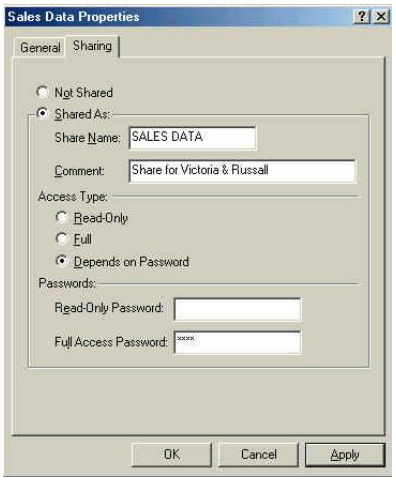
8. Click the radio button next to Share As (Take the Default Name)

Repeat these steps on:
Workstation 1
Workstation 2
Workstation 3

Workstation 1



Workstation 2



Workstation 3

9. Access Type:

Read-only access means that anyone accessing this folder over the network can only look at or retrieve files. They cannot put new files in the folder or delete or modify existing

files.
Full access is just that: the ability to read, write, delete and create files in this folder. You can also choose to allow either type of access depending on which password is provided.

Click the radio button next to *Read-Only*
Leave the Read-Only Password field blank.

Click the radio button next to *Depends on Password*
Type `read` (without the quotes) in the *Read-Only Password* field Type `full` (without the quotes) in the *Full Access Password* field.

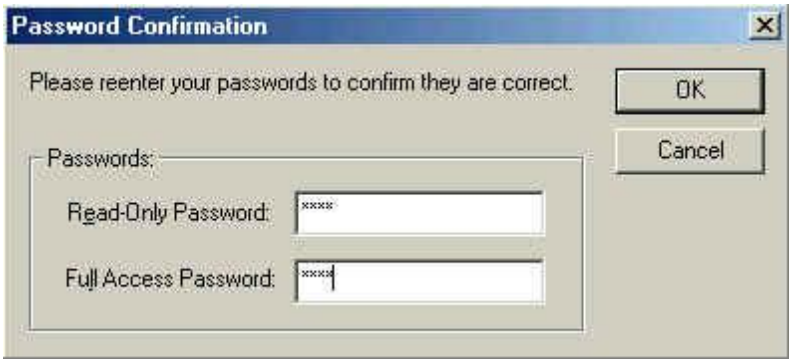
Click the radio button next to *Depends on Password*
Type `read` (without the quotes) in the *Read-Only Password* field Type `full` (without the quotes) in the *Full Access Password* field.

Password Confirmation window

10. Click the **apply** button.

    Workstations 2 and 3 will display this screen.

11. Type the *Read-Only* and *Full Access* Password in the appropriate fields.



Password information

The object when choosing a password is to make it as difficult as possible for a hacker to make educated guesses about what you've chosen. This leaves him no alternative but a brute-force search, trying every possible combination of letters, numbers, and punctuation. A search of this sort, even conducted on a machine that could try one million passwords per second (most machines can try less than one hundred per second), would require, on the average, over one hundred years to complete.

<u>What Not to Use</u>

- Don't use your login name in any form (as-is, reversed, capitalized, doubled, etc.).
- Don't use your first or last name in any form.
- Don't use your spouse's or child's name.
- Don't use other information easily obtained about you. This includes license plate numbers, telephone numbers, social security numbers, the brand of your automobile, the name of the street you live on, etc.
- Don't use a password of all digits, or all the same letter. This significantly decreases the search time for a hacker.
- Don't use a word contained in (English or foreign language) dictionaries, spelling lists, or other lists of words.
- Don't use a password shorter than six characters.

<u>What to Use</u>

- Do use a password with mixed-case alphabetic characters.
- Do use a password with nonalphabetic characters, e.g., digits or punctuation.
- Do use a password that is easy to remember, so you don't have to write it down.
- Do use a password that you can type quickly, without having to look at the

keyboard. This makes it harder for someone to steal your password by watching over your shoulder.

Data Source, http://www.alw.nih.gov/Security/Docs/passwd.html

For simplicity, this lab will only use the word password for the account password. Exception, the Server administration account for the server.

Local Disk (C:) window

12. The folder on your computer will now display and hand under the folder. This signifies this is a shared network folder.

13. Close all open windows.

Workstation 1

Workstation 2

Workstation 3

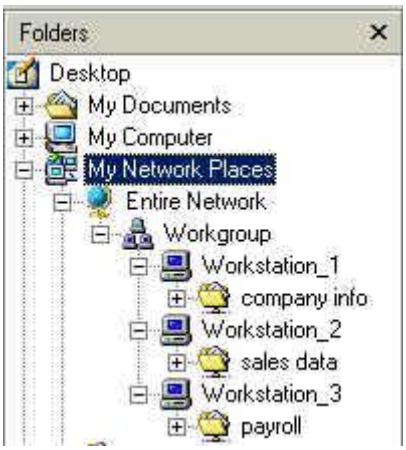
Desktop

Verify the folders have been shared.

14. Right click on the My Network Places Icon.
15. Click **Explore**.

My Documents window

16. Expand the Entire Network by clicking the (**+**) plus sign next to Entire Network.
17. Click the (**+**) plus next to Workgroup
18. Continue clicking the (**+**) plus sign on the folder contained inside Workgroup until the shared folders are displayed.
19. Close this window.



Step Two: Connecting to a Shared Folder

Directions: Follow the instructions listed below.

You have created shared folders on the workstations. Now you access those folders from other machines on the network.

Desktop

1. Right click on the My Network Places icon. Click **Properties**.

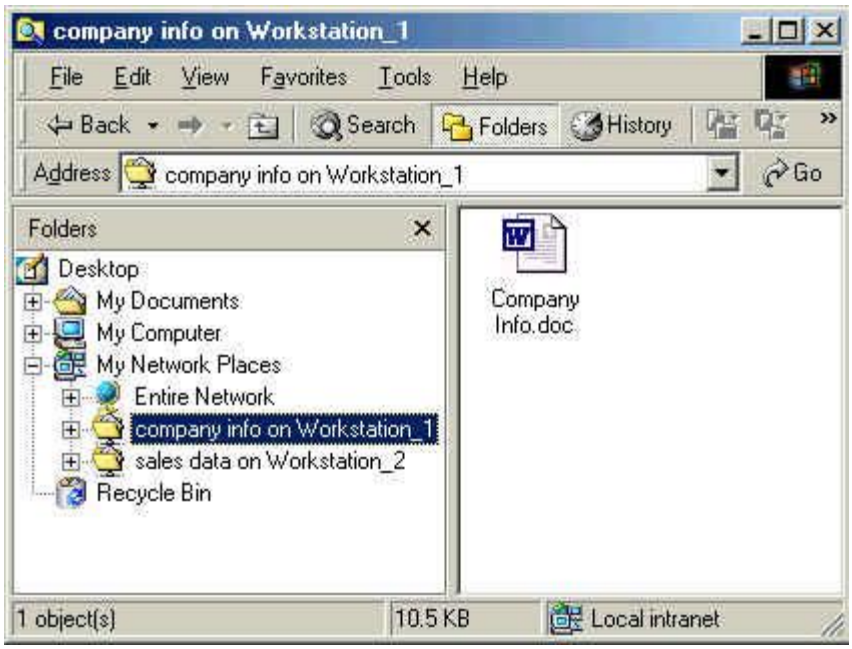
My Network Places
Your workstation will display the shared folders on the network <u>excluding</u> the shared folder on your workstation.

This is the view on Workstation 3 also known as Jennifer Bird's workstation.

(Folder Name) window

2. Workstations 2 and 3, click the folder labeled Company info on Workstation_1

   Notice the file Company Info.doc displays in the right side of the window.



Enter Network Password window

3. Click the folder labeled sales data on Workstation_2

   Notice the Enter Network Password challenge window on your screen.

4. Type `full` in the field to access the data.

Microsoft Networking alert window

If you would have entered the wrong password, you would have seen this window.

Why was it necessary to enter a password?

Scenario Three:

Six months have passed since Jennifer configured the Faded Treasures network. The system had been working flawlessly until Thursday. On Thursday, the hard drive in Russell's computer had an unrecoverable failure. To make this situation worse, Russell had never backed up the data on his computer thus loosing all the sales data for Faded Treasures. The visibly upset Victoria directed Jennifer to find a solution to avoid this situation in the future.

Jennifer began searching for a solution and discovered the file serving abilities in Windows 2000 Professional.

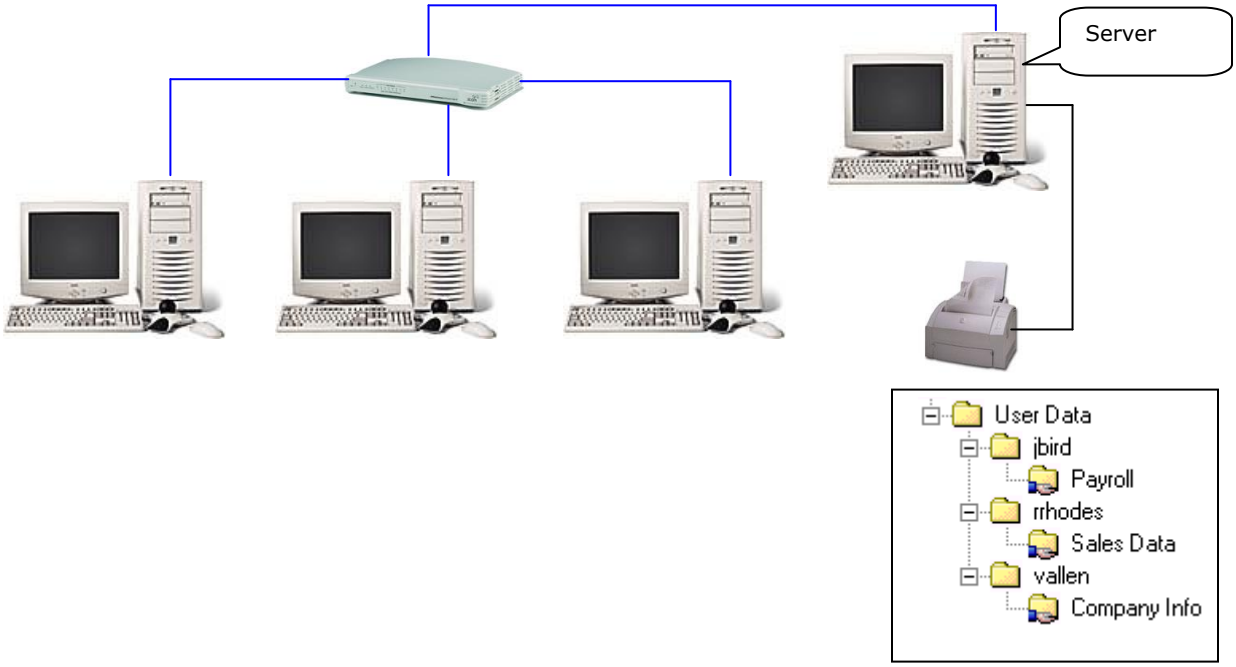
Assignment 3:

Your team will use Workstations 1 through 3 plus the Server to configure a central file server. Your team will configure the following network folders on the server:

1. A separate folder for each person of Faded Treasures to save their data to.
2. A sales folder that only Victoria and Russell have access to.
3. A payroll folder that only Victoria and Jennifer have access to.
4. A Company Information folder that Victoria, Russell and Jennifer access to.

In addition your team will move the printer form Victoria's workstation to the server then reconfigure the printer at each persons workstation.

Use the following instructions to accomplish this assignment.



Step One: Configure IP Address and Workgroup

Directions: Follow the instructions listed below.

The following task will be performed at the server. If the server has not been previously setup, do so now. See page 5 for details.

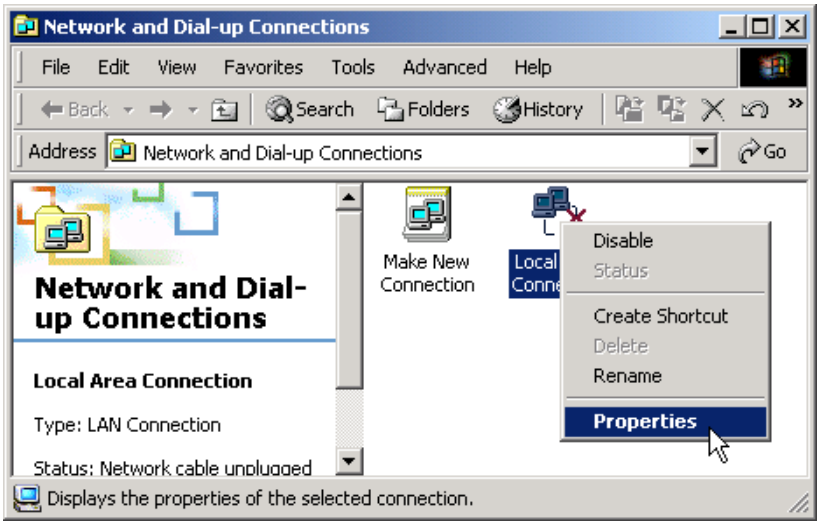
You will be adding and IP address to the server as you did in Assignment 1.

Desktop

1. Place your mouse over the My Network Places icon.
2. Click the right mouse button choose **Properties**

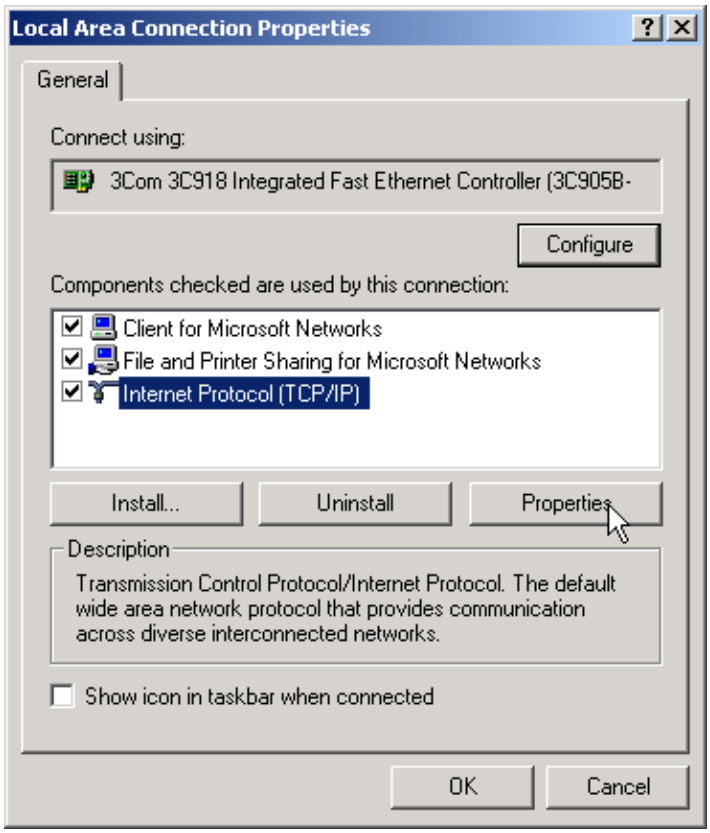
Network and Dial-up Connections window

3. Right Click Local Area Connection
4. Click **Properties**



Local Area ConnectionProperties window
Configuration Tab

10. Select **TCP/IP**
11. Click the **Properties** button.

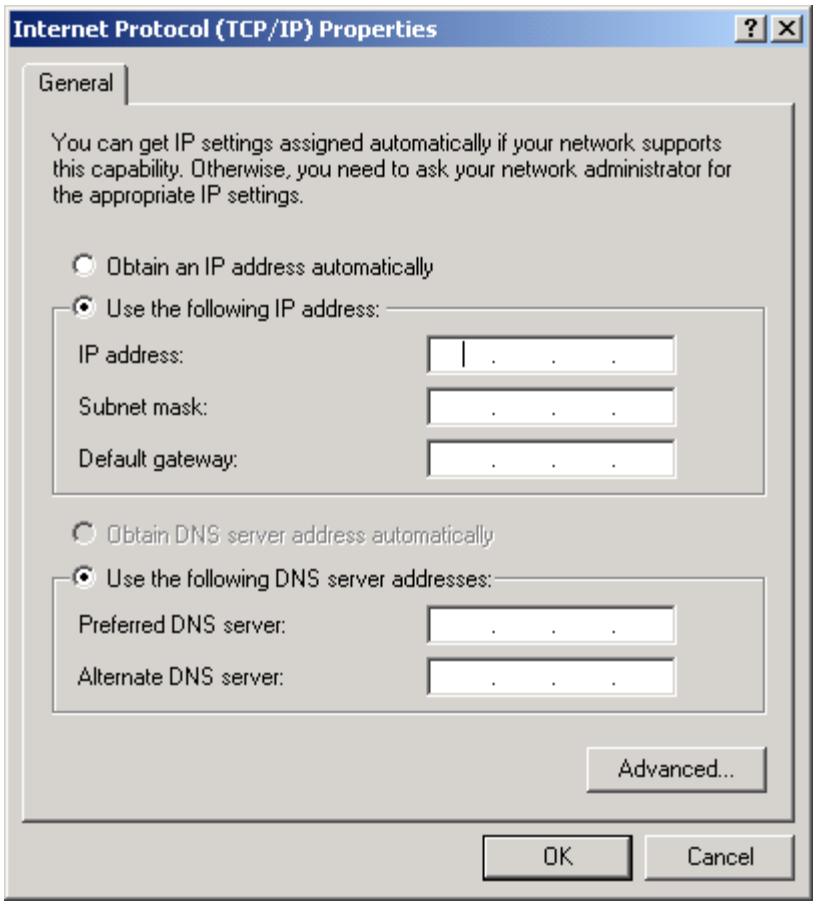


Internet Protocol (TCP/IP) Properties window

1. Select the radio button to the right of *Use the IP address*. (*The IP Address* and *Subnet Mask* field will activate)
2. Type the following information in the IP

   Server:
   IP Address:
   `192.168.0.100`
   Subnet Mask:
   `255.255.255.0`
   Default gateway:
   `192.168.0.1`

3. Click **OK** to close the **TCP/IP** window.
4. Click **OK** to close the **Network** window.



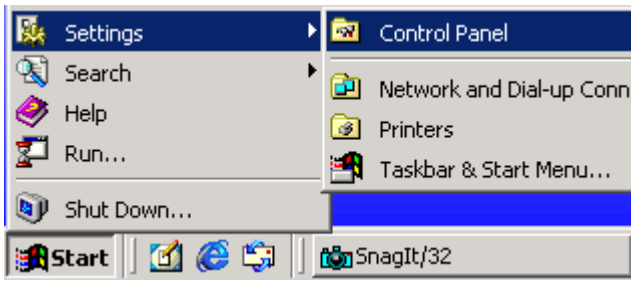
Step Two: Create User Accounts

Directions: Follow the instructions listed below.

The server utilizes the security of Windows 2000. One feature of this added security is the ability to have each person accessing data on the server to have a user account along with necessary permissions. In this activity you will be adding user account for each workstations owner.

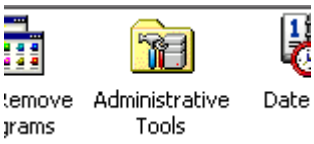
Desktop

1. Click **Start**, choose **Settings**, select **Control Panel**



Control Panel window

2. Double click the **Administrative Tools** icon.

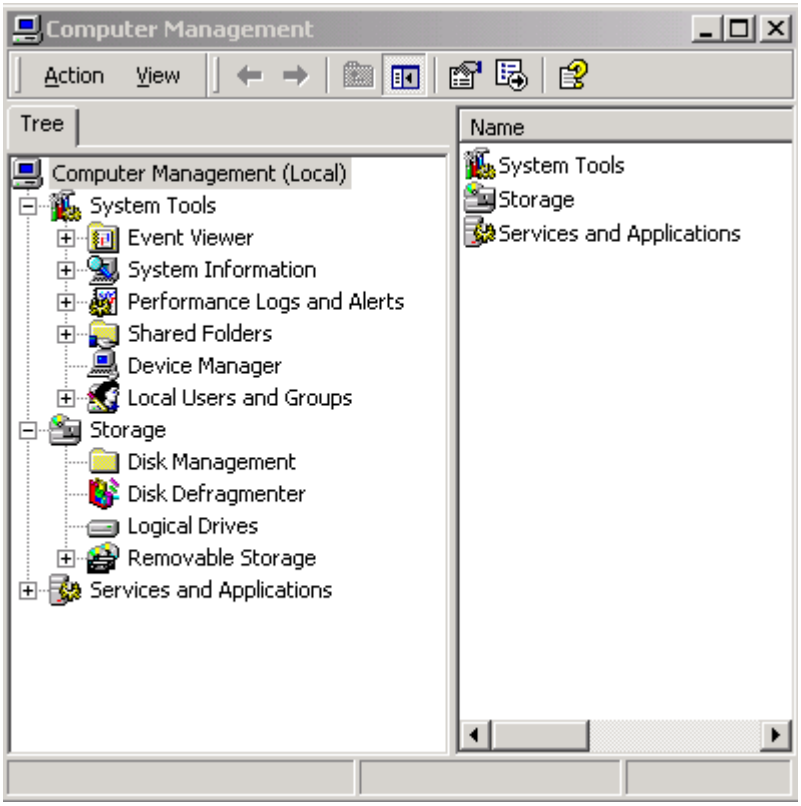


Administrative Tools window

3. Double Click **Computer Management**

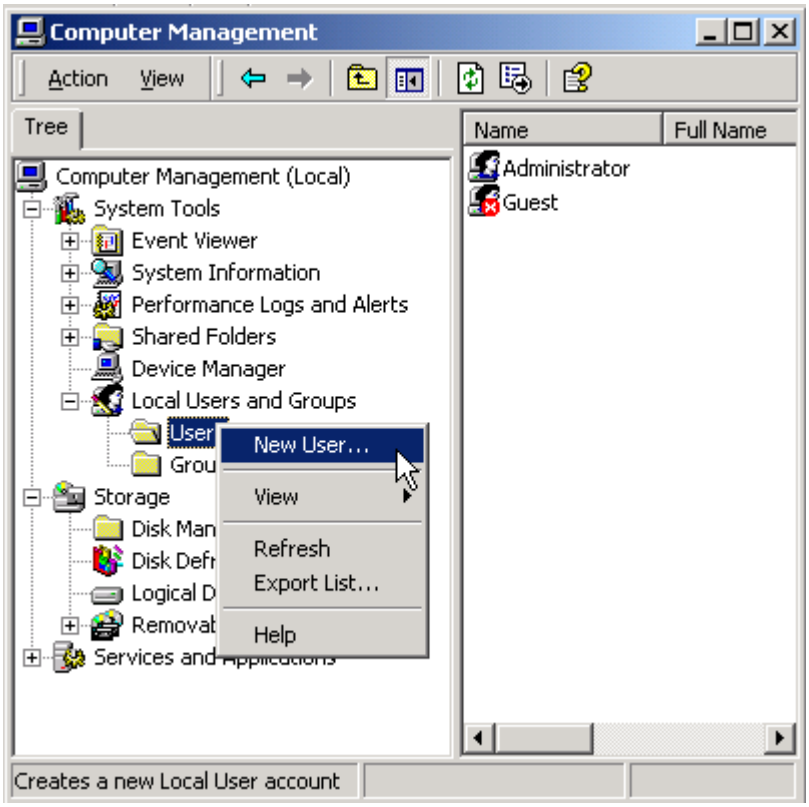
Computer Management window

4. Expand Local User and Groups by clicking the (**+**) Plus sign.



Computer Management window

5. Right click the **Users** folder then click **New User**…



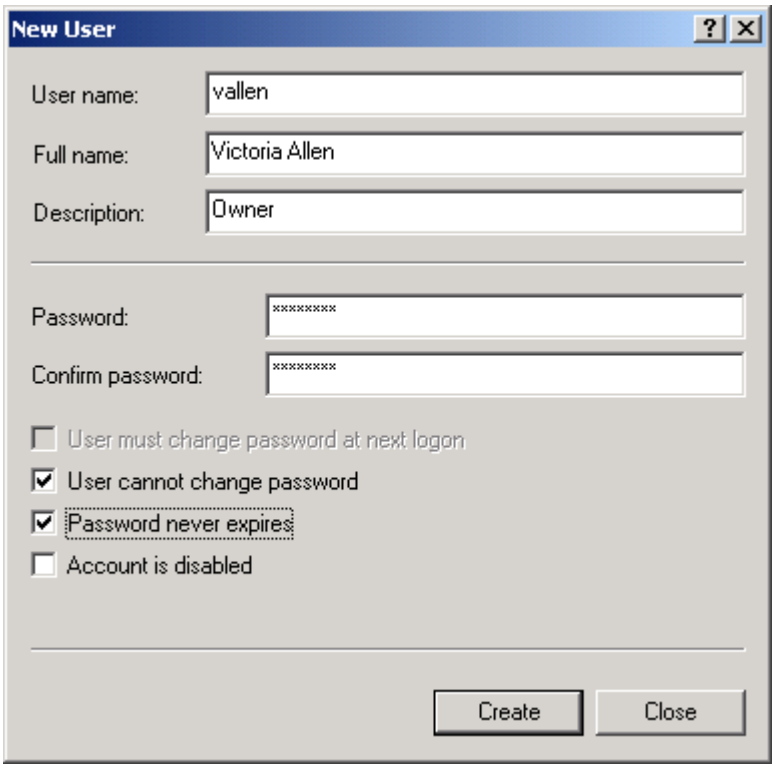
New User window

Each student will enter their users name

6. Type the following information in the appropriate fields.

- *User name*: `vallen`
- *Full name*: `Victoria Allen`
- *Description*: `Owner`
- *Password*: `password`
- *Confirm password*: password
- Remove the check from: *User must change password at next logon*
- Place a check mark in: *User cannot change password* *Password never expires*

7. Click the **Create** button.

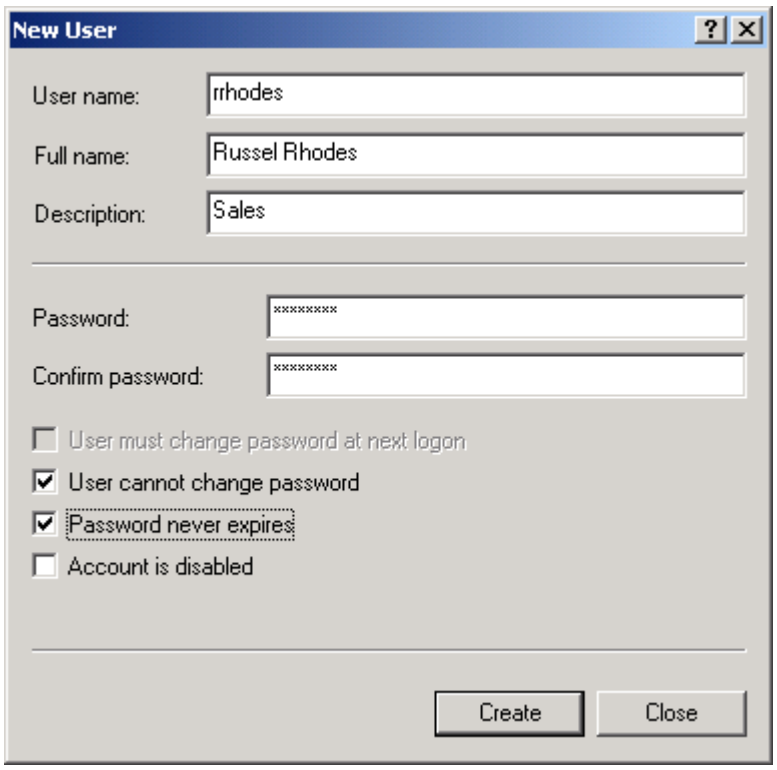


New User window

8. Type the following information in the appropriate fields.

- *User name*: `rrhodes`
- *Full name*: `Russel Rhodes`
- *Description*: `Sales`
- *Password*: `password`
- *Confirm password*: `password`
- Remove the check from:
  User must change password at next logon
  Place a check mark in:
  User cannot change password
  Password never expires

9. Click the **Create** button.

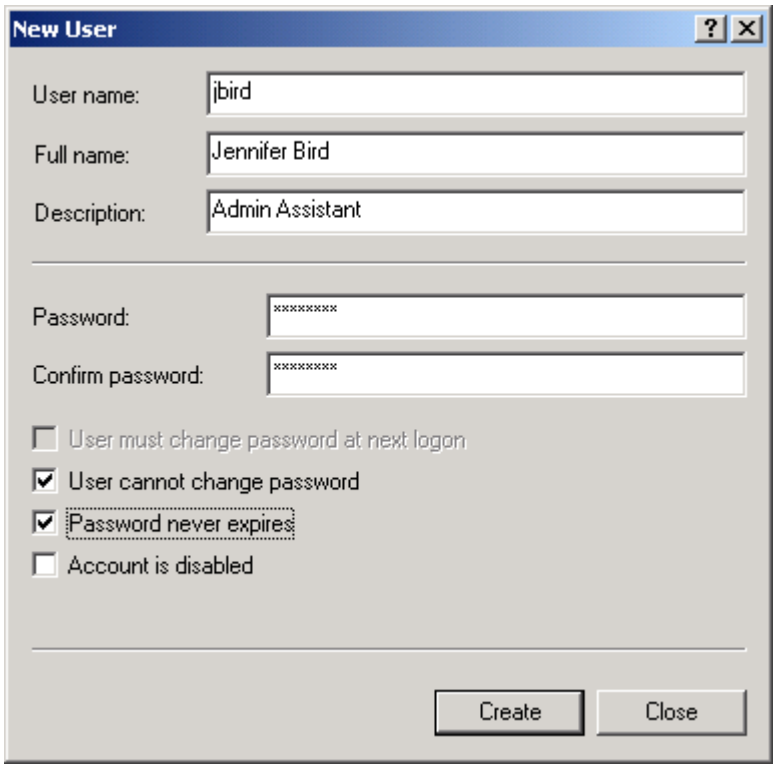


New User window

10. Type the following information in the appropriate fields.

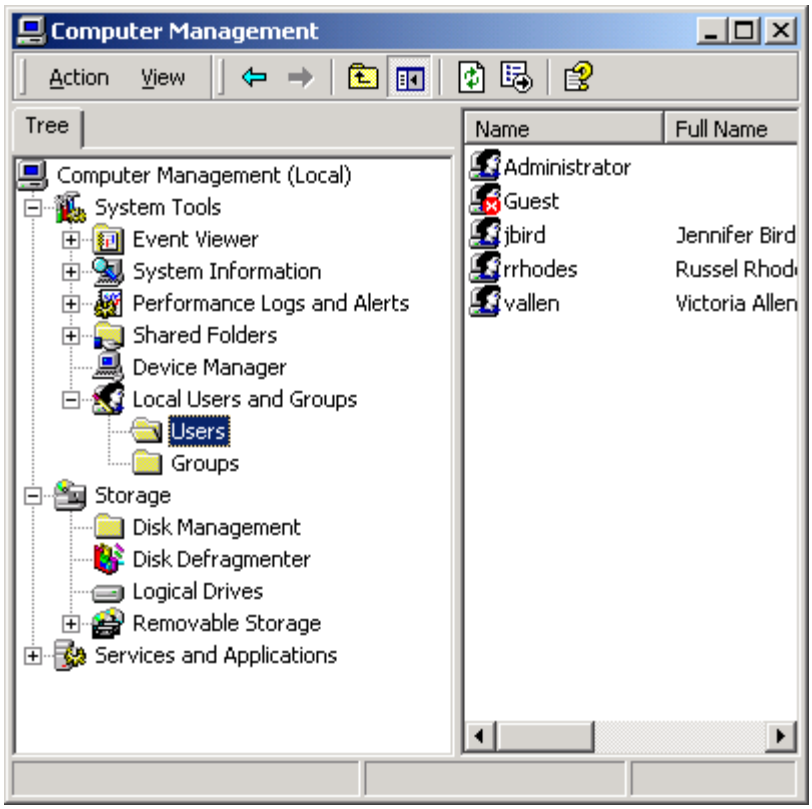
- *User name*: `jbird`
- *Full name*: `Jennifer Bird`
- *Description*: `Admin Assistant`
- *Password*: `password`
- *Confirm password*: `password`
- Remove the check from:
  User must change password at next logon.
- Place a check mark in:
  User cannot change password
  Password never expires

11. Click the **Create** button.
12. Click the **Close** button



Computer Management window

13. All users will now be visible.
14. Close all windows



15. Reality Check for Passwords…

Step Three: Create User Groups

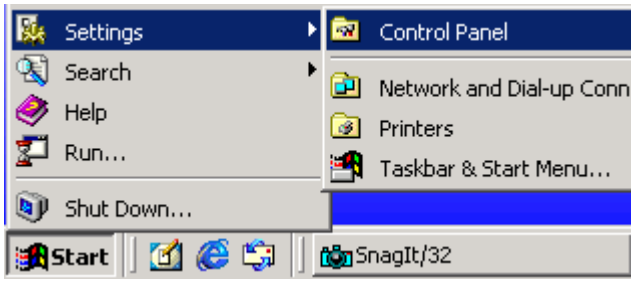
In the last activity, user accounts were created. Later in this Scenario file permissions will be set for folders being shared. Sharing folders is more secure in Windows 2000 than ME and Windows 2000 will allow only people with permission to access a folder. Those users without the necessary permission will not be allowed to access the information. With only three users, this is not a tough to manage. However, as the number of users increase, so does the management. Therefore the use of groups is encouraged. Groups are given access to a folder, not the individual user.

Folder Shares will not change very often. However, it is possible to add and remove users on a daily basis. Rather than changing the permissions on each folder, the user is added or removed from the group.

Directions: Follow the instructions listed below.

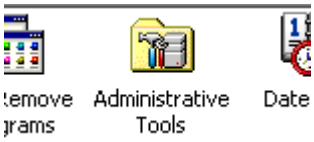
Desktop

1. Click **Start**, choose **Settings**, select **Control Panel**



Control Panel window

2. Double click the **Administrative Tools** icon.

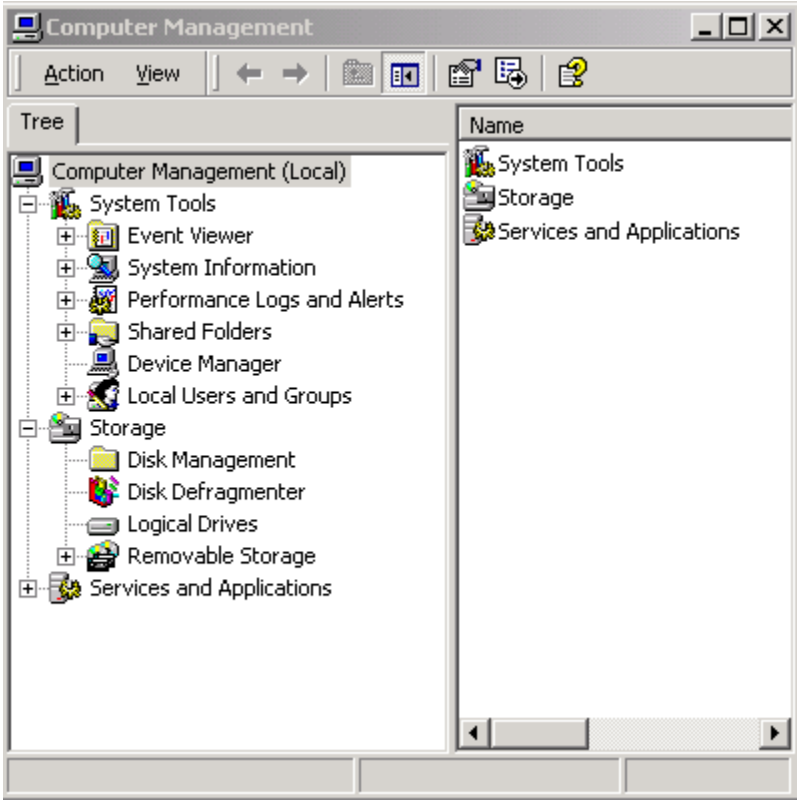


Administrative Tools window

3. Double Click **Computer Management**.

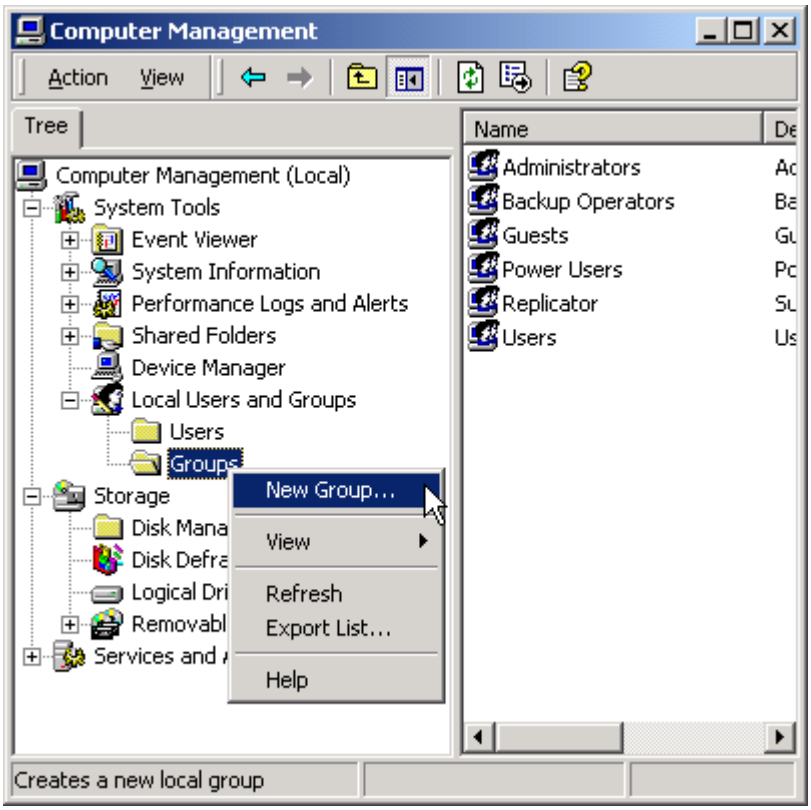
Computer Management window

4. Expand Local User and Groups by clicking the (**+**) Plus sign.



Computer Management window

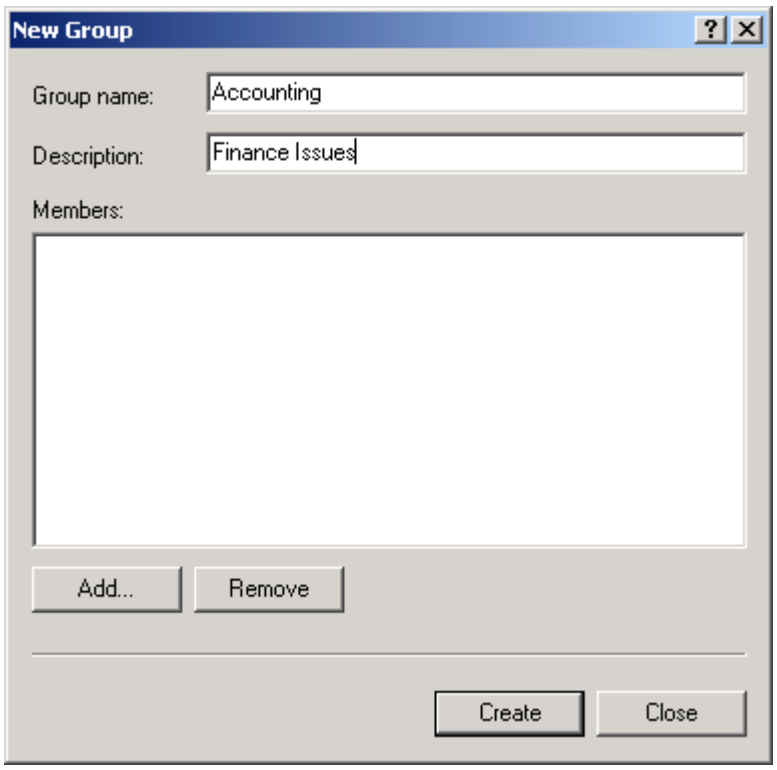
5. Right click the **Groups** folder then click **New Group**…



New Group window

6. Type the following information
- *Group name*: `Accounting`
- *Description*: `Finance Issues`

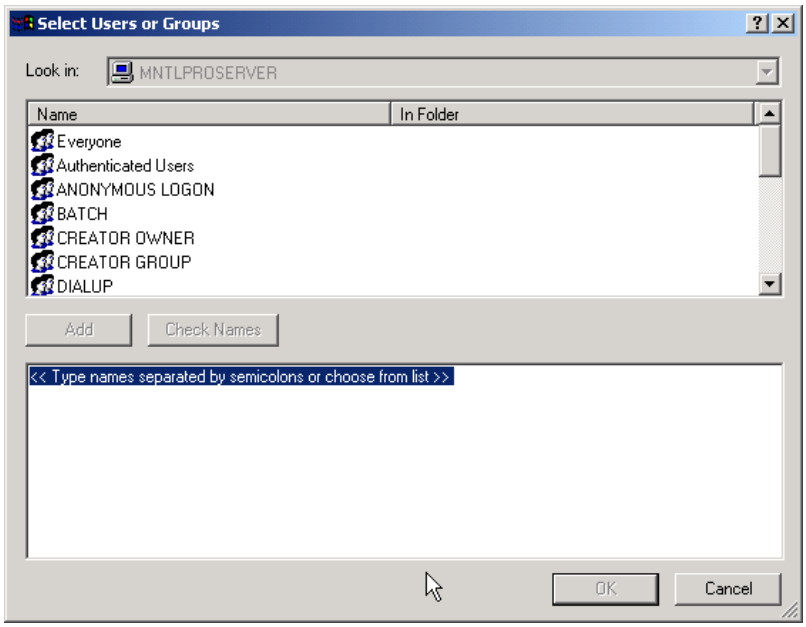
7. Click the **Add**… button.



Select Users or Groups window

8. Scroll the upper window until you see user names.

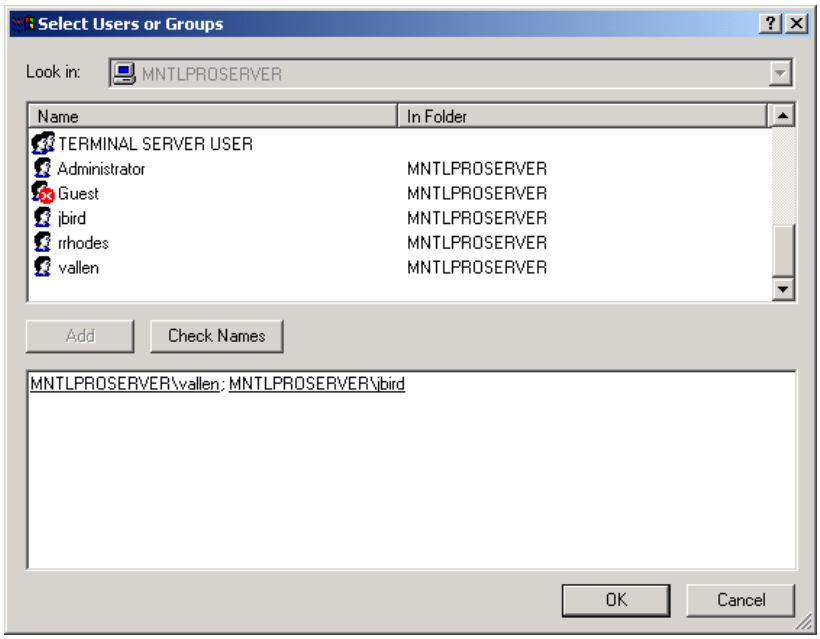
Note: Users will show one little face, groups will show two faces



Select Users or Groups window

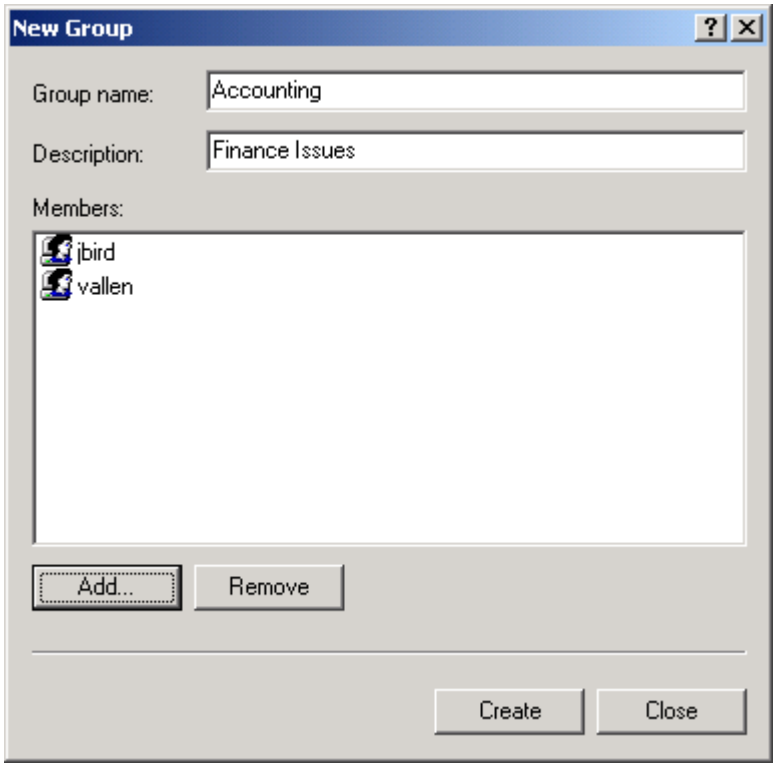
9. Double click on:
    - Vallen
    - Jbird

    The name will display in the field below.
10. Click the **Ok** button.



New Group window

11. Click the **Create** button.
12. Click the **Close** button.



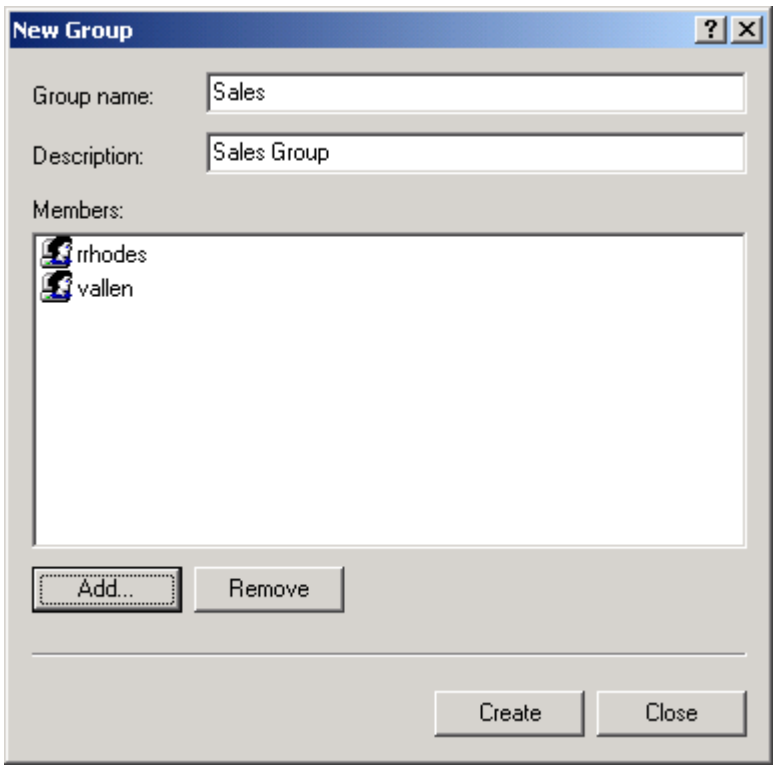
New Group window

13. Repeat the process to create the Sales Group.

- *Group name*: `Sales`
- *Description*: `Sales Group`

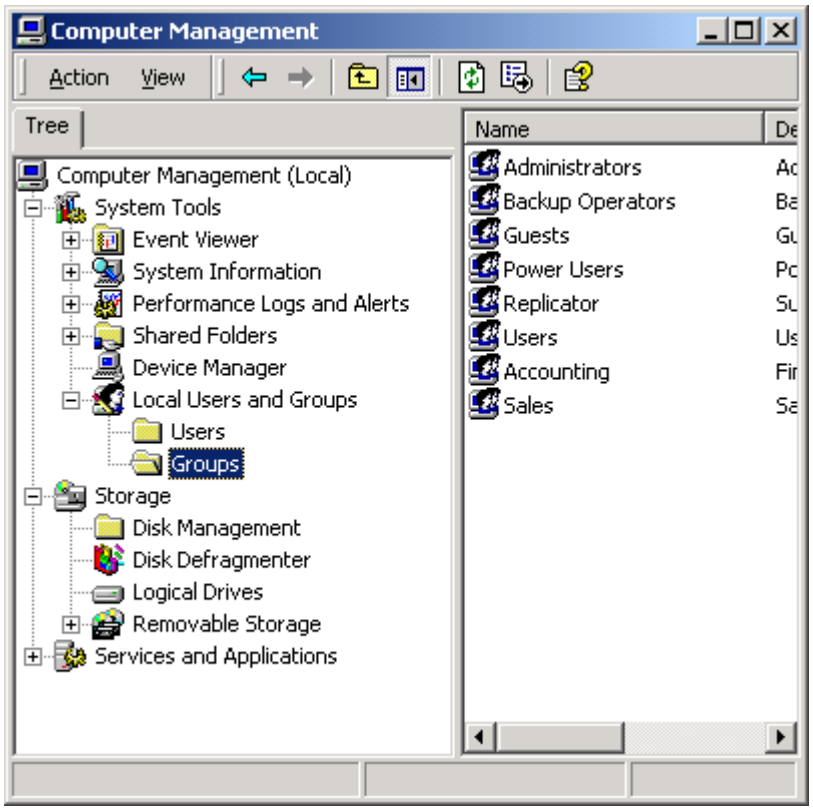
Add rrhodes and vallen to the list of members to this group.

14. Click **Create**.
15. Click **Close**.



Computer Management window

16. The two additional groups will now be visible.
17. Close all windows.



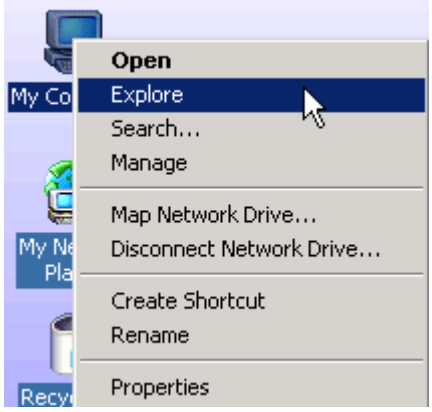
Step Four: Create Data Folders

Directions: Follow the instructions listed below.
We will create these folders using a slightly different method.

You will be creating shared folders on the server. This will eliminate the need for shared folders on each workstation. Additionally information will be more secure.

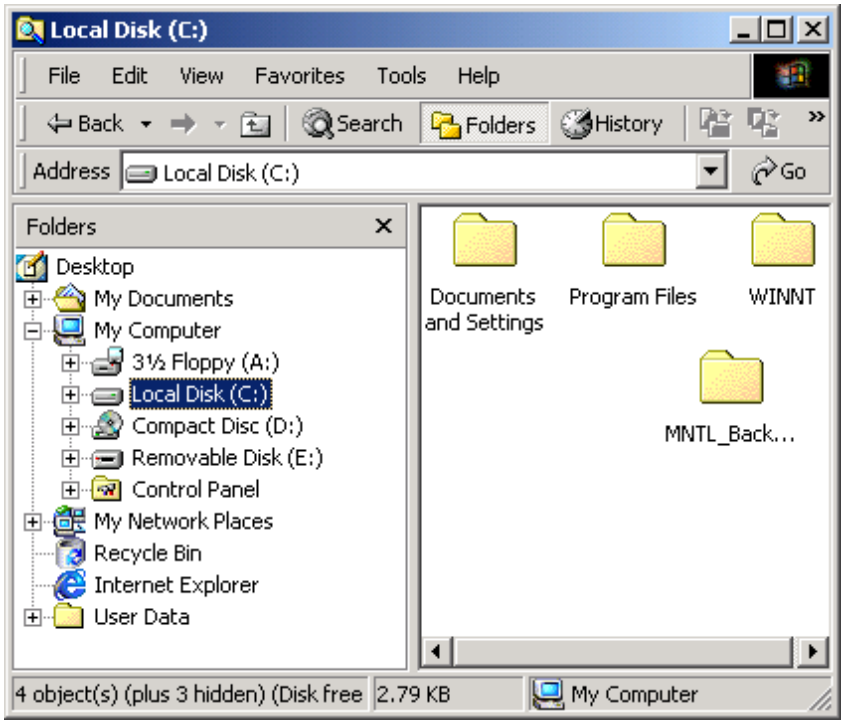
Desktop

1. Right click My Computer.
2. Click **Explore**



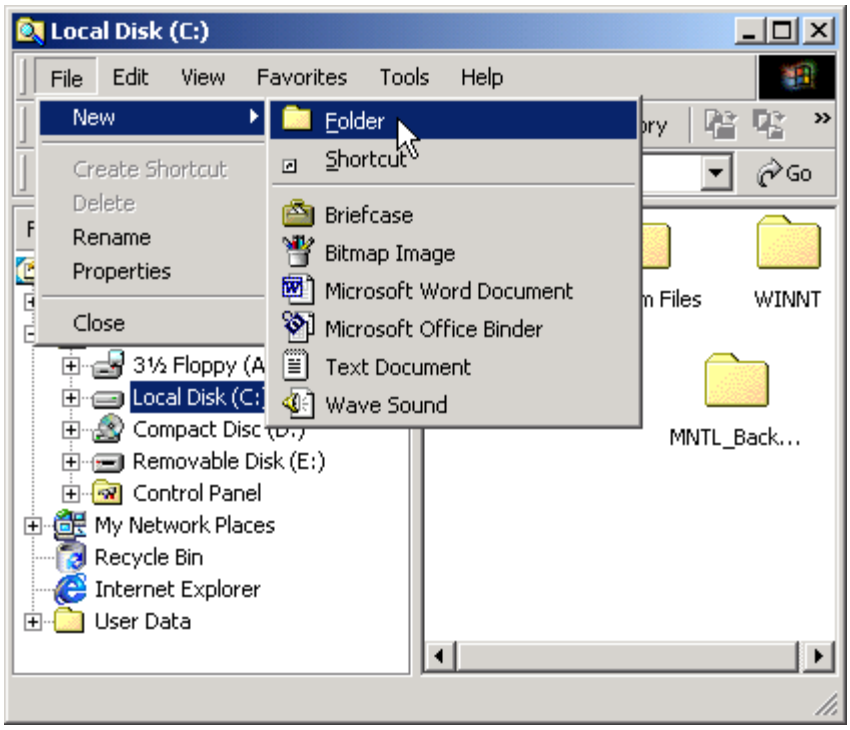
Local Disk (C:) window

3. Select the Local Disk (C:) icon n the **Folders** pane.



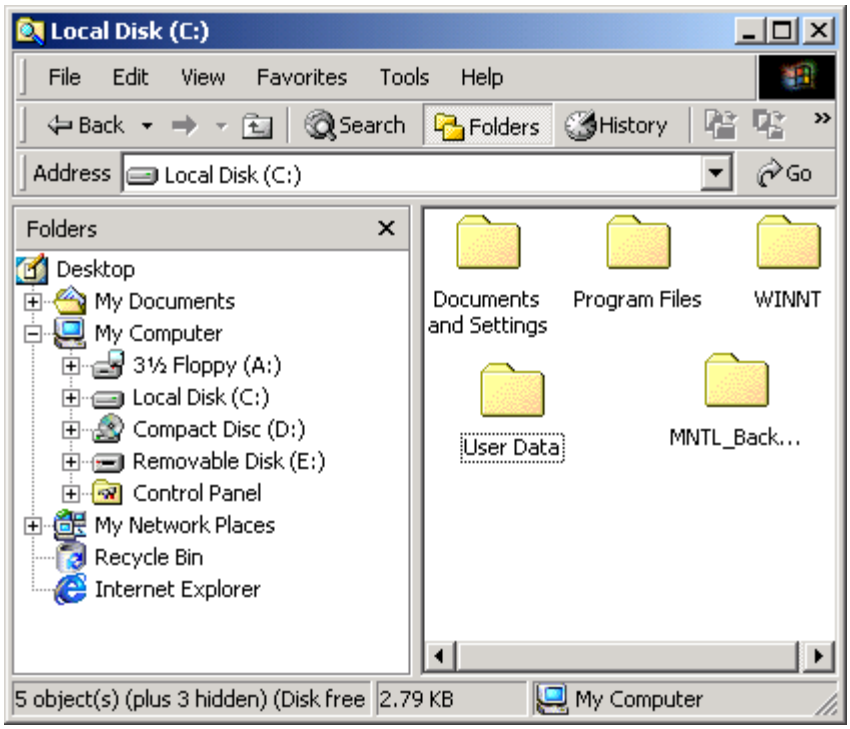
Local Disk (C:) window

4. Click **File**
5. Click **New**
6. Click **Folder**



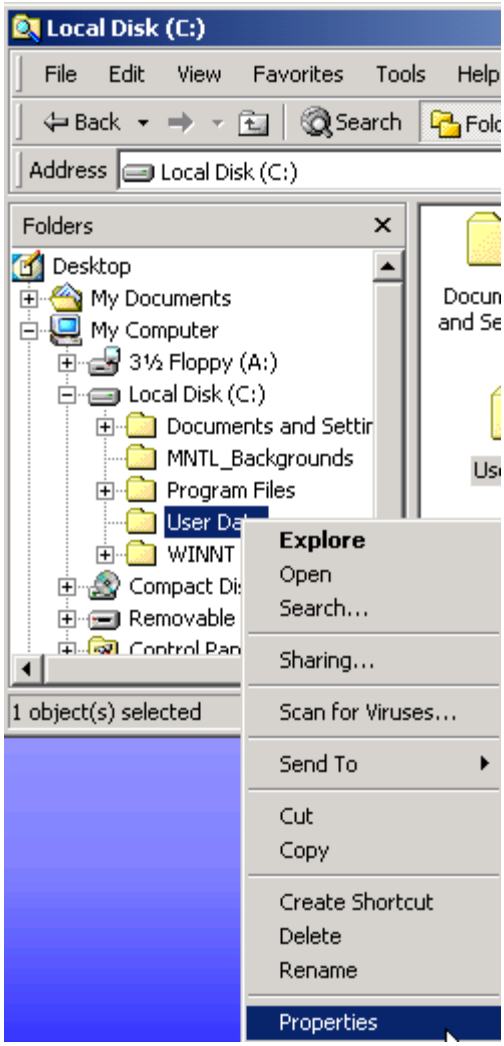
Local Disk (C:) window

7. The new folder will be in rename mode, type `User Data` press the **Enter** key on the keyboard.



Local Disk (C:) window

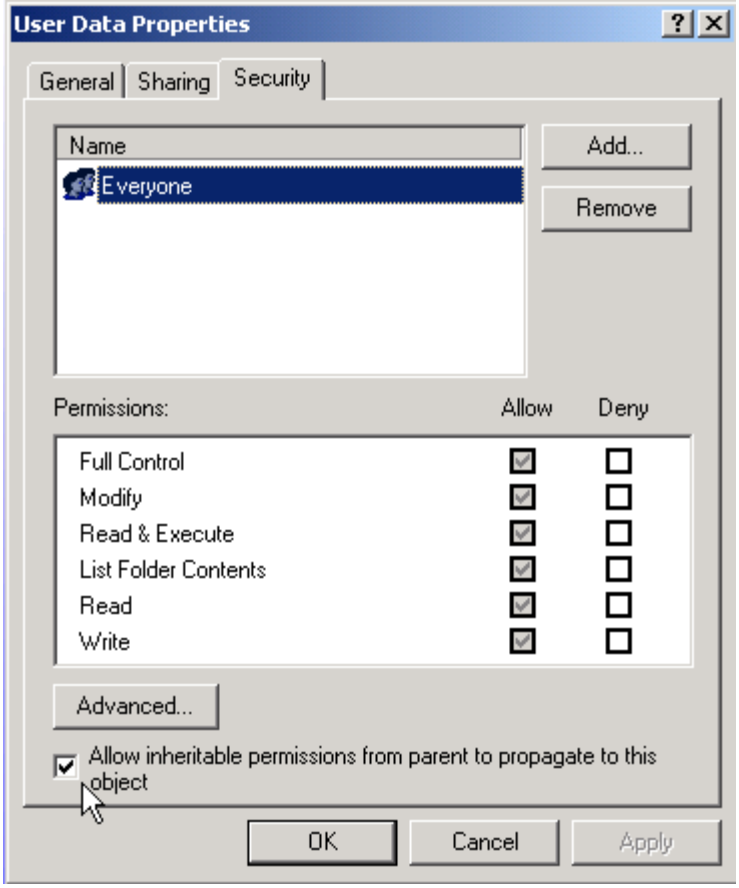
8. Right click the User Data folder. Choose **Properties**



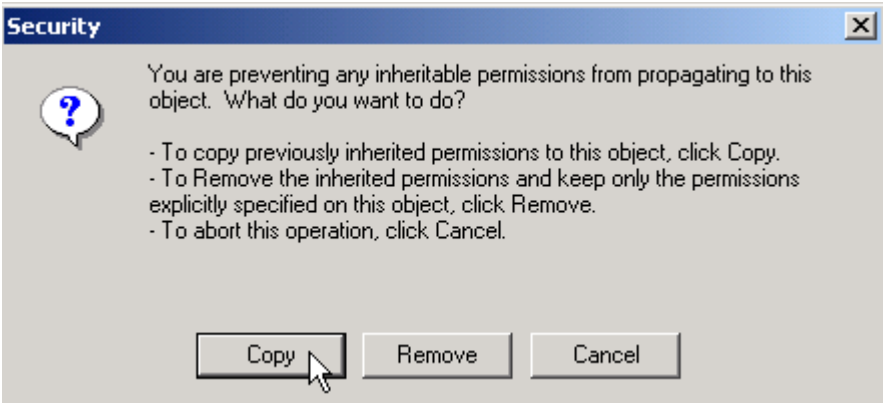
User Data Properties window
Security tab

9. Remove the check box from *Allow inheritable permissions form parent to propagate to this object*

For more information on NTFS permissions, see Appendix B

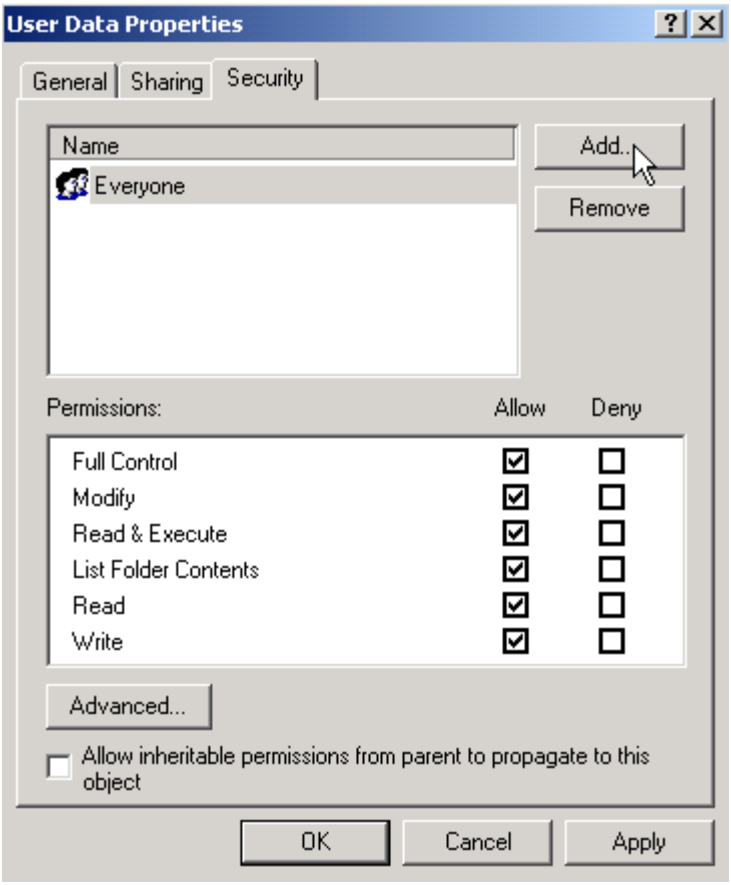


Security window
10. Click **Copy**



User Data Properties window
Security tab

11. Click the **Add** button



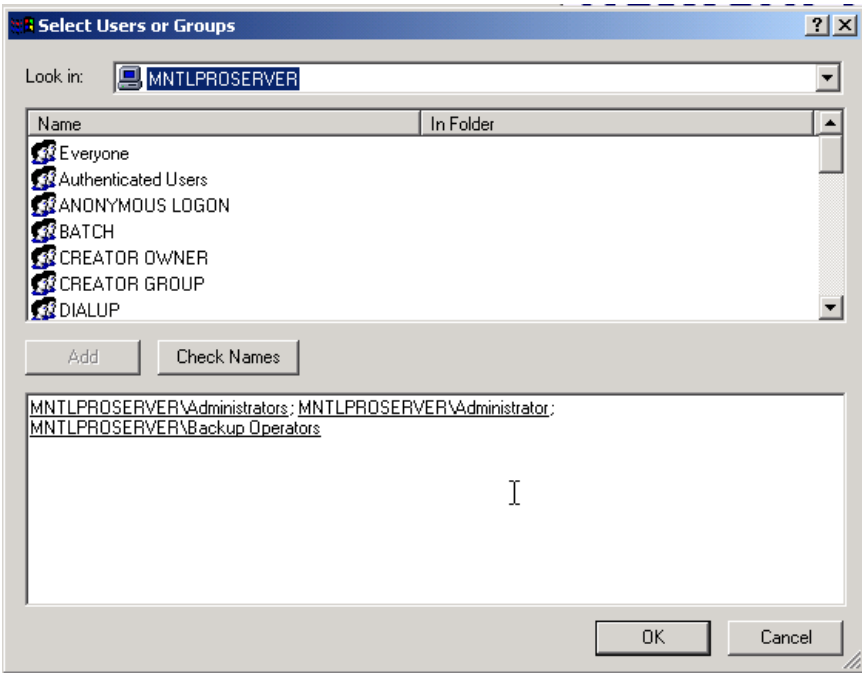
Select Users or Groups

18. Scroll the upper window until you see user names.

Note: Users will show one little face, groups will show two faces

19. Double click on:
    - Administrators
    - Administrator
    - Backup Operators

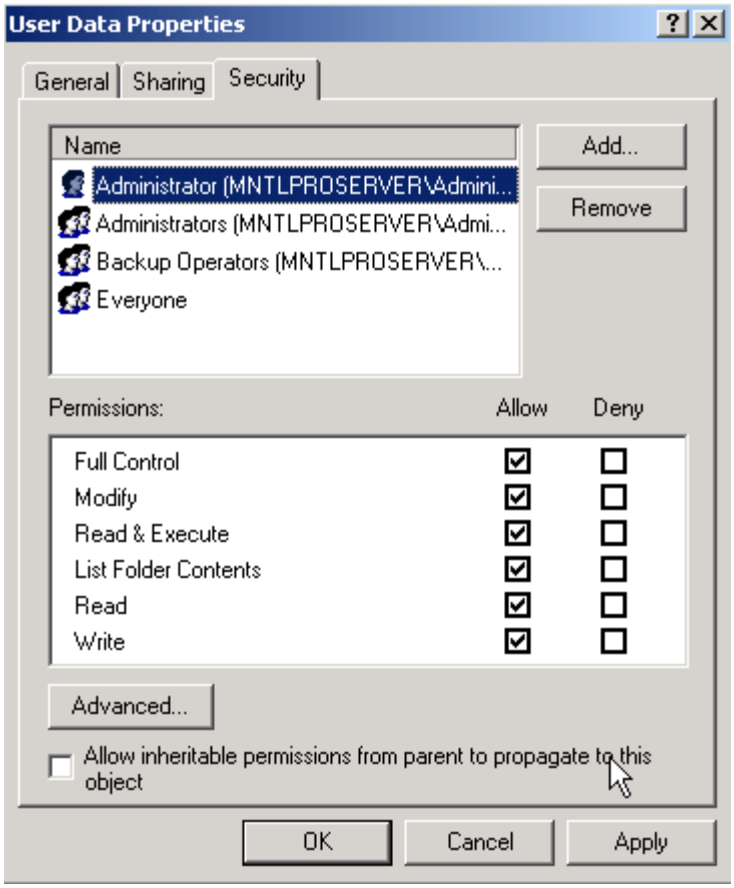
    The name will display in the field below.
20. Click the **Ok** button.



User Data Properties window
Security tab

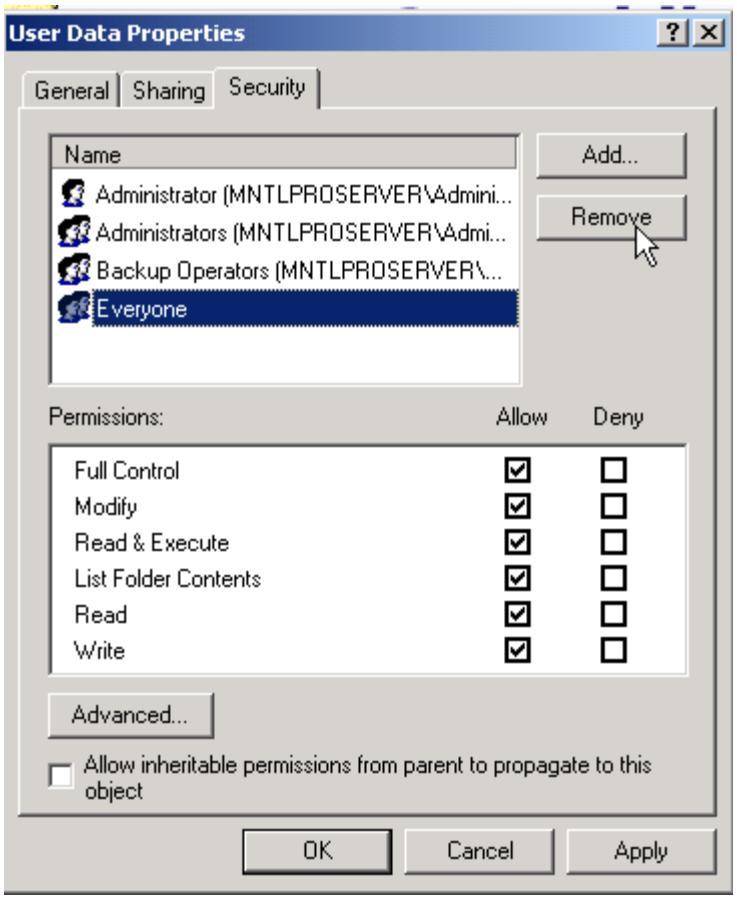
21. Click the *Allow* check box next to *Full Control*. Checks will appear in the:
    Modify
    Read & Execute
    List Folder Contents
    Read
    Write check boxes.
22. Click **Apply**

Note: If the everyone group is not removed, all user accounts will have access to this folder and future sub folders.



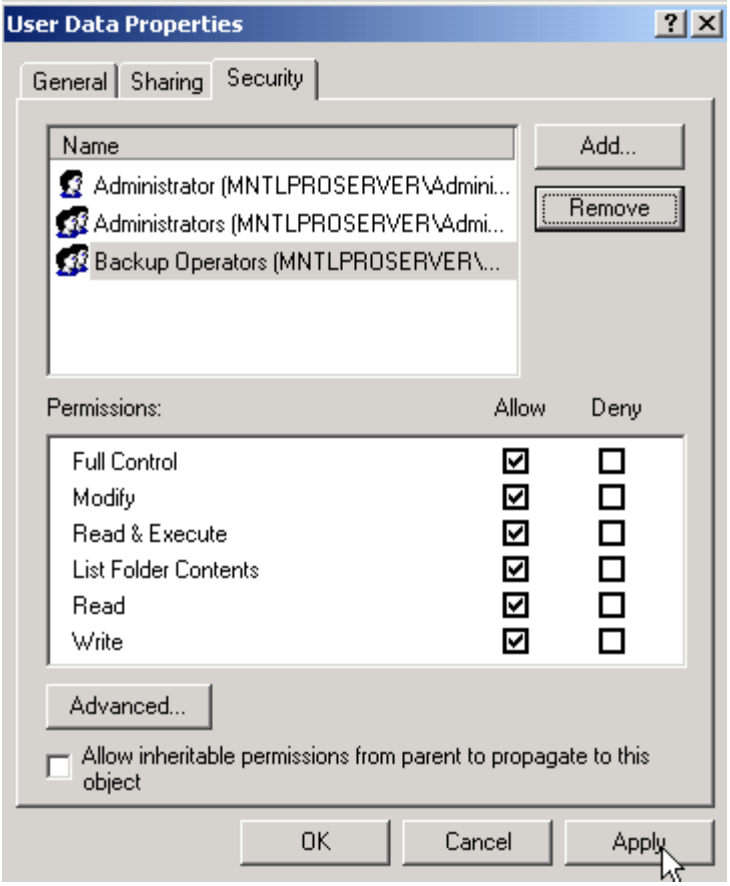
User Data Properties window
Security tab

23. Select Everyone
24. Click the **Remove** button



User Data Properties window
Security tab

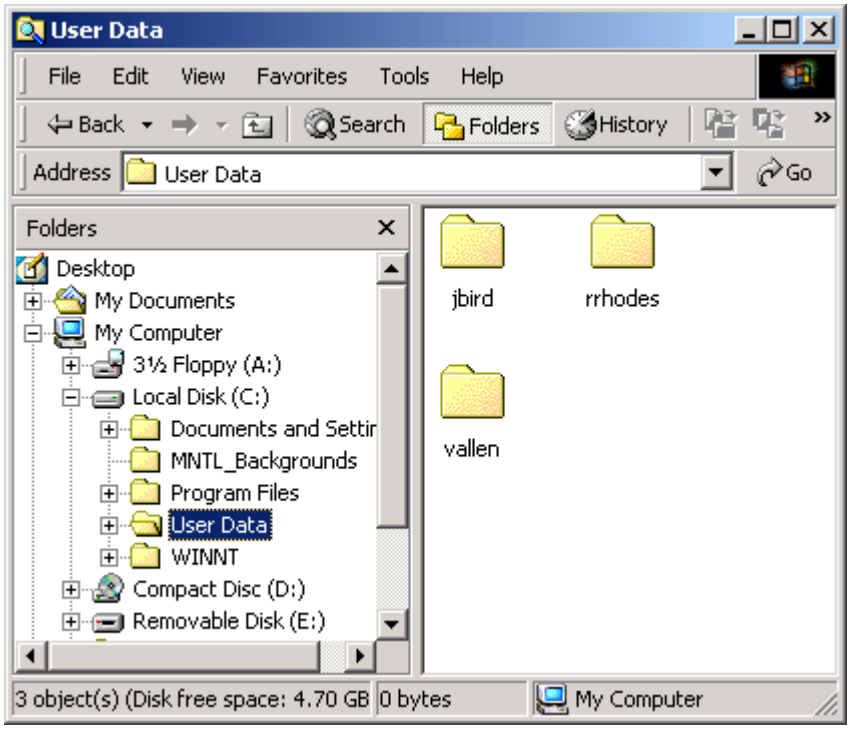
25. Click the **Apply** button.
26. Click **Ok**



User Data window

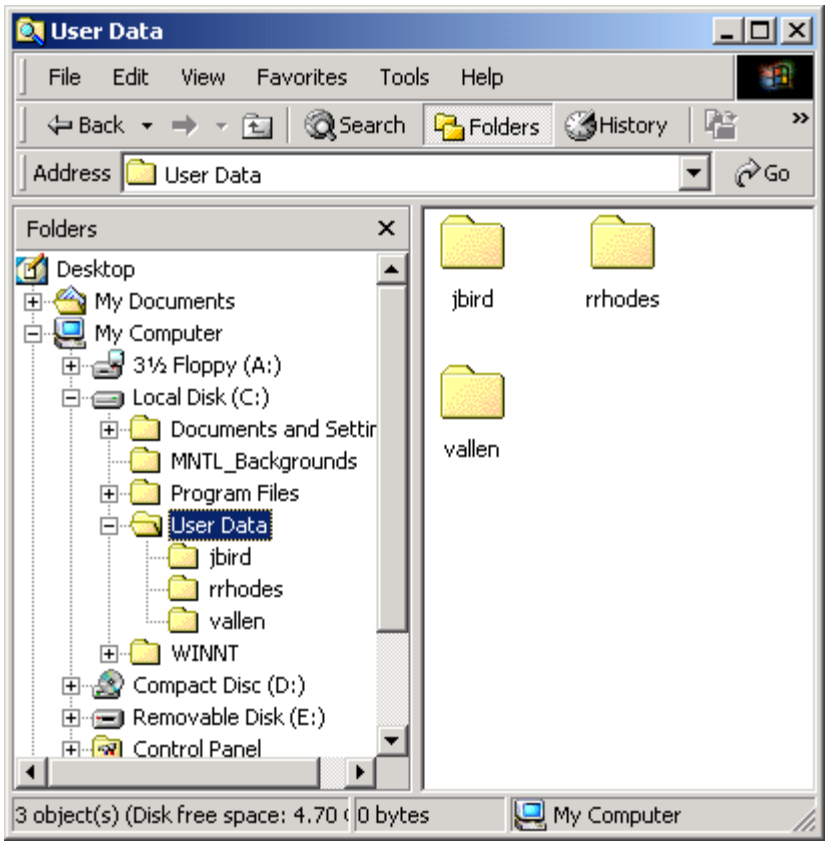
27. Expand the C drive by clicking the (+) plus sign.
28. Select the User Data folder.
29. Create three folders with the following names inside the User Data folder.

- vallen
- rrhodes
- jbird



User Data window

30. Expand the User Data folder by clicking the (+) plus sign.

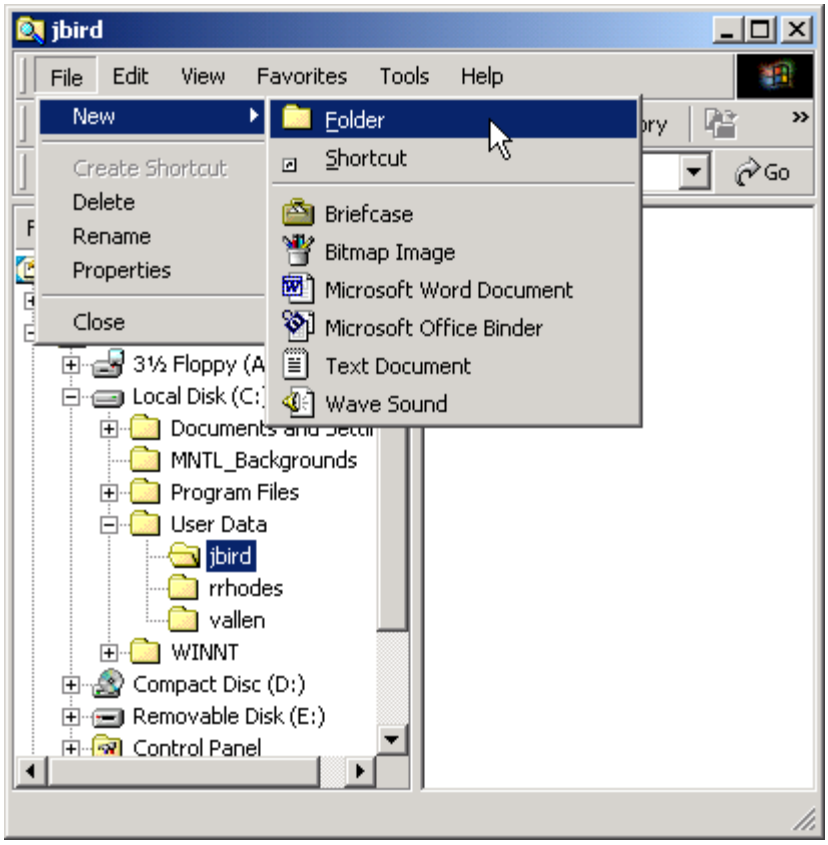


User folder window

Creating sub folder inside of each users folder.

- vallen
  - Company Info
- rrhodes
  - Sales Data
- jbird
  - Payroll

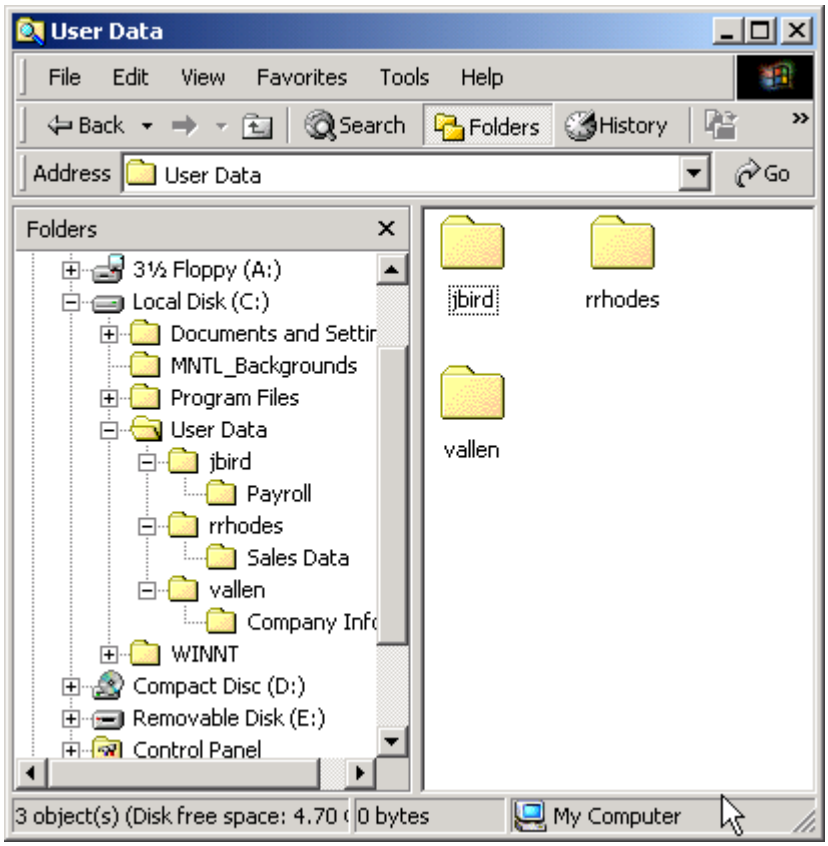
31. Select the folder you wish to create the sub folder in.
32. Click **File**
33. Click **New**
34. Click **Folder**
35. Name the folder as stated above
36. Repeat the process for each folder listed above.



User Data window

37. Expand each users folder by clicking the (+) plus sign.

    The file tree should show each users folder with the sub folder shown.



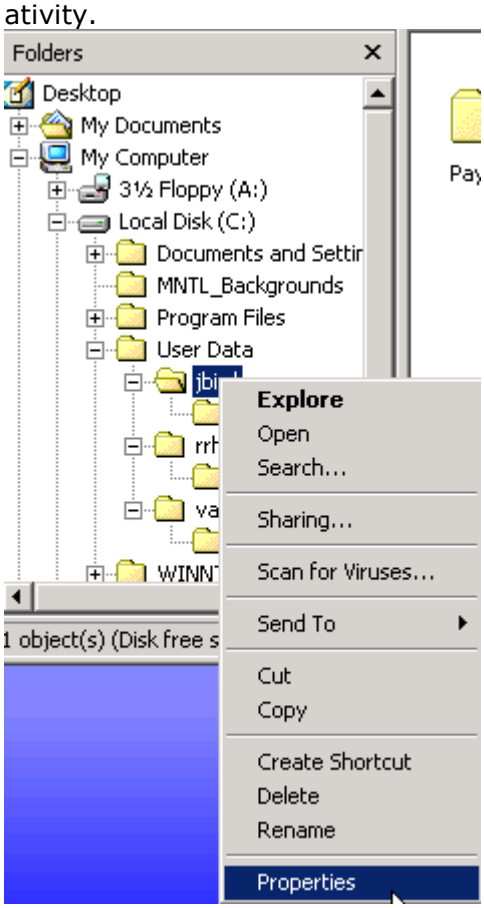
Step Five: Set Folder Permissions

User Data window

1. Right click the Payroll folder listed inside the parent folder of jbird.
2. Click **Properties**

Directions: Follow the instructions listed below.

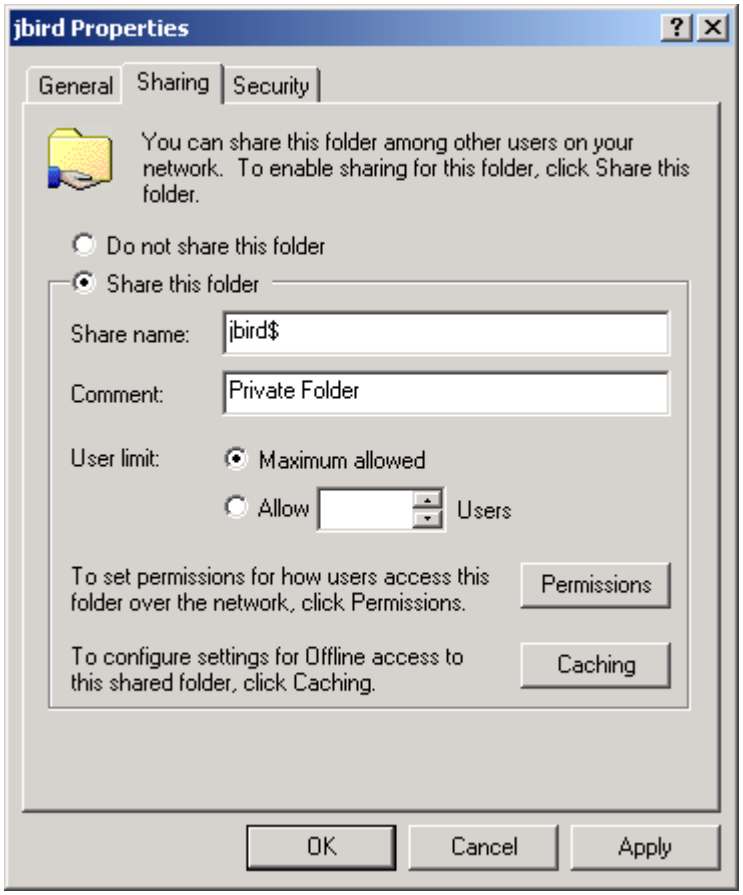
You will be setting permissions for each users folder in this ativity.



User Data window
Sharing tab

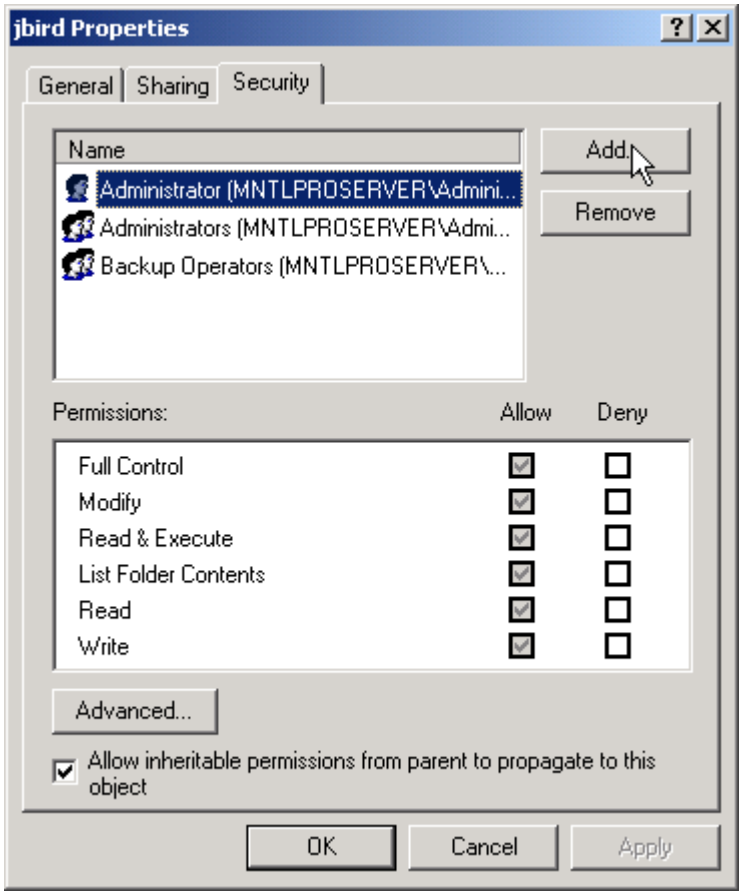
3. Click the ***Sharing*** tab
4. Click the Radio button next to *Share this folder*.
5. Click the **Apply** button.
6. Click the ***Security*** tab

Note: If you recall shared folder created in Scenario 2 was visible to all users. Adding the $ sign to the end of the share name will hide the shared folder to all users on the network.



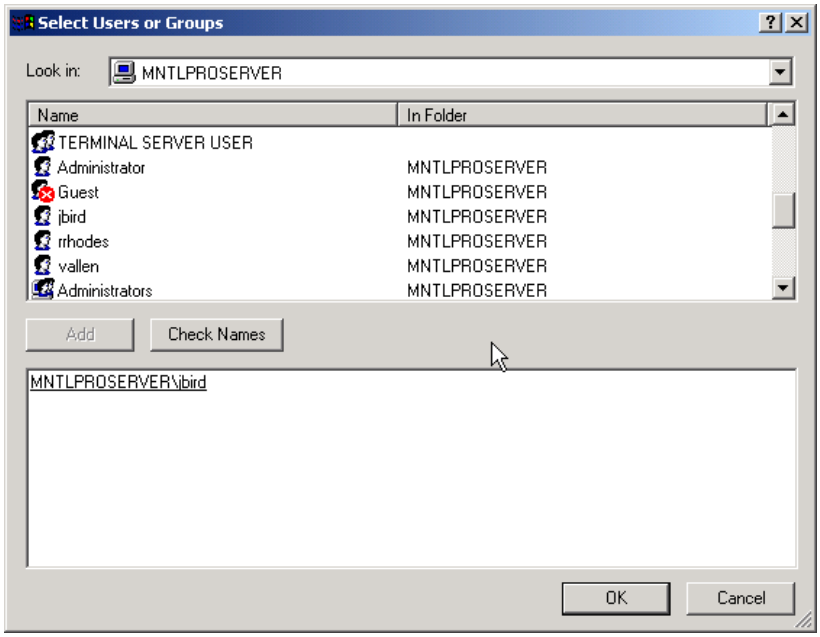
Jbird Properties window

7. Click the **Add** button



Select Users or Groups window

8. Scroll the name field until jbird is located.
9. Select jbird
10. Click the **Add** button
11. Click **Ok**

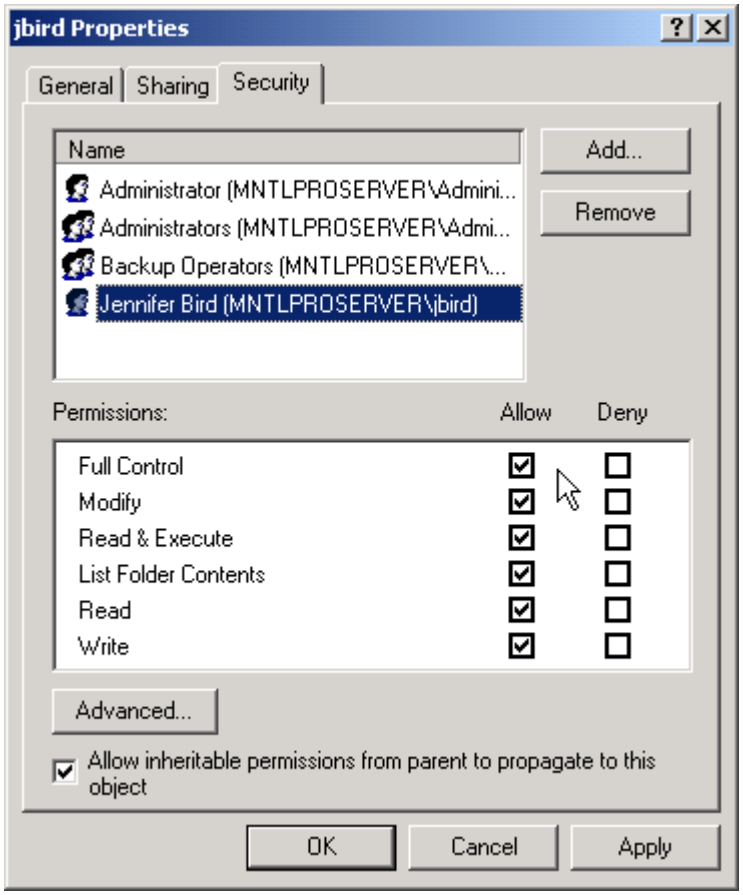


jbird Properties window

12. Select Jennifer Bird
13. Place a check mark in the *Full Control* box.
14. Click **Apply**
15. Click **Ok**

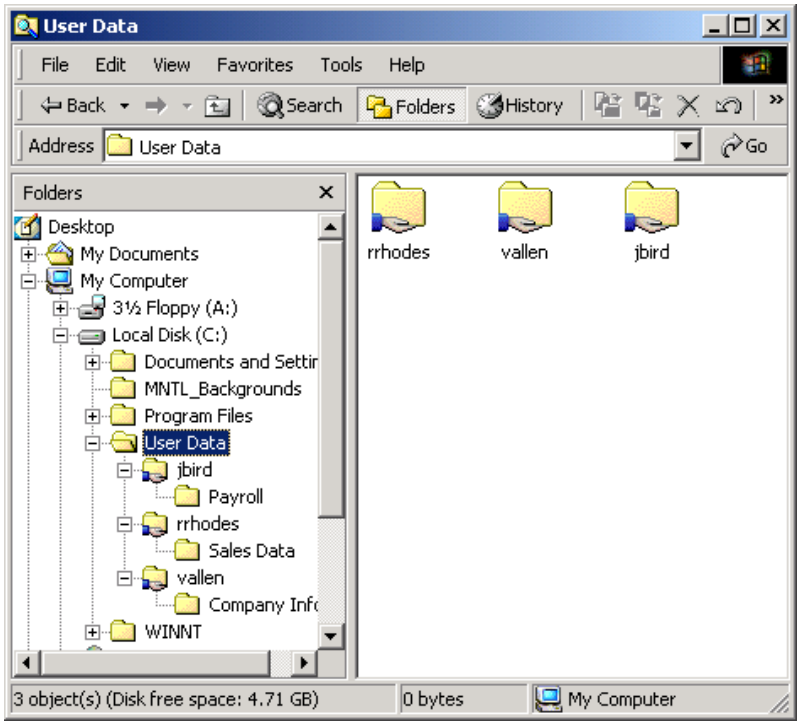
Repeat these steps for the following folders giving the appropriate person access to the folder:

- **rrhodes**
- **vallen**



User Data window

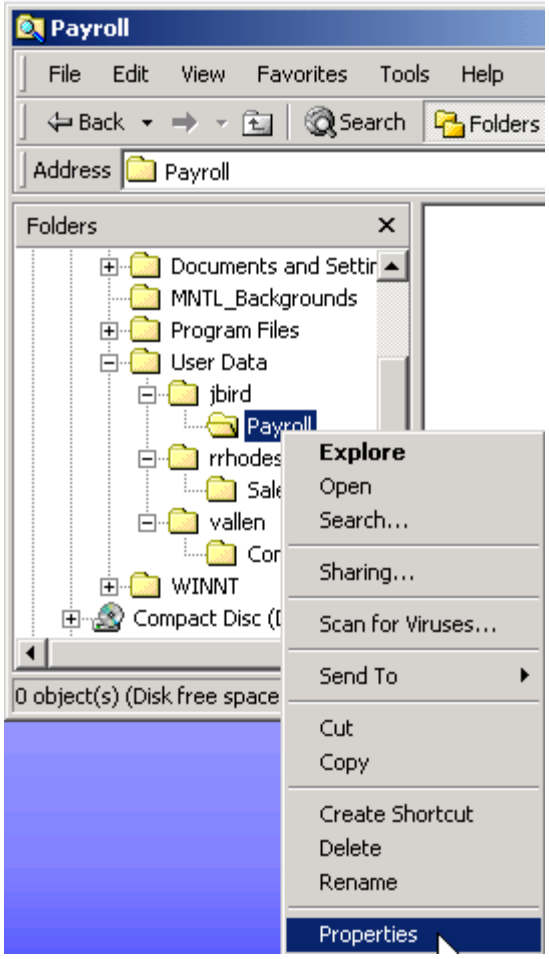
The folder structure should now match the image shown.



Setting Permission for User Data window

The data inside the Payroll, Sales and Company Info folders need to be accessed by multiple people. In this exercise, you will give specific users access to individual folders.

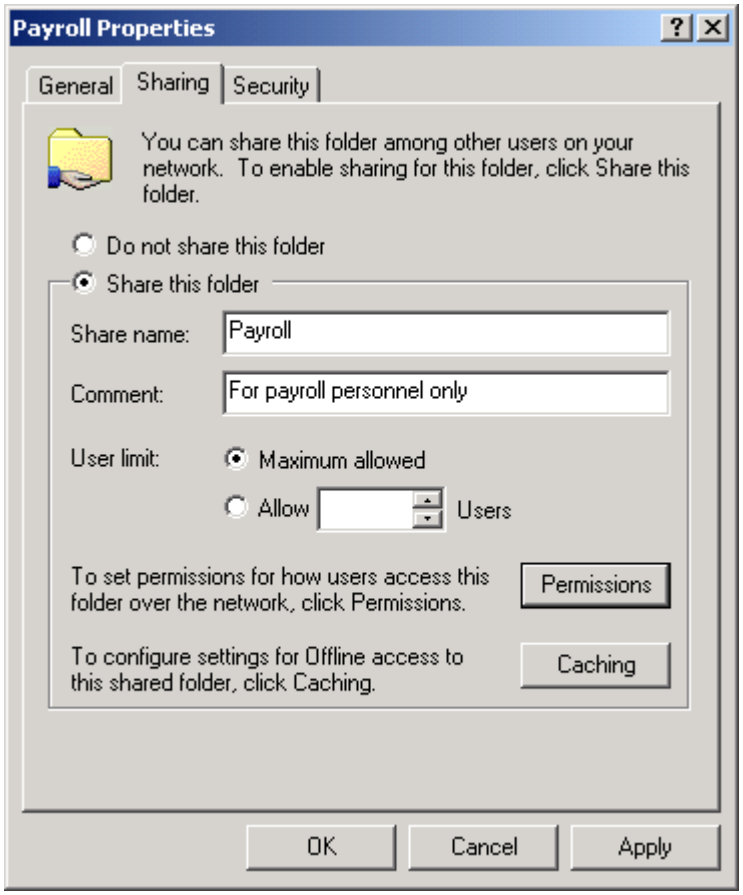
16. Right Click the Payroll folder listed inside the parent folder of jbird.
17. Click **Properties**



Payroll Properties window
Sharing tab

18. Click the ***Sharing*** tab
19. Type `Payroll` in the *Share name*: field and `For payroll personnel only` in the *Comment*: field.
20. Click the **Apply** button.
21. Click the **Security** tab

Note: This share will not be hidden to the network therefore the $ sign will not be added to the end of the share name.

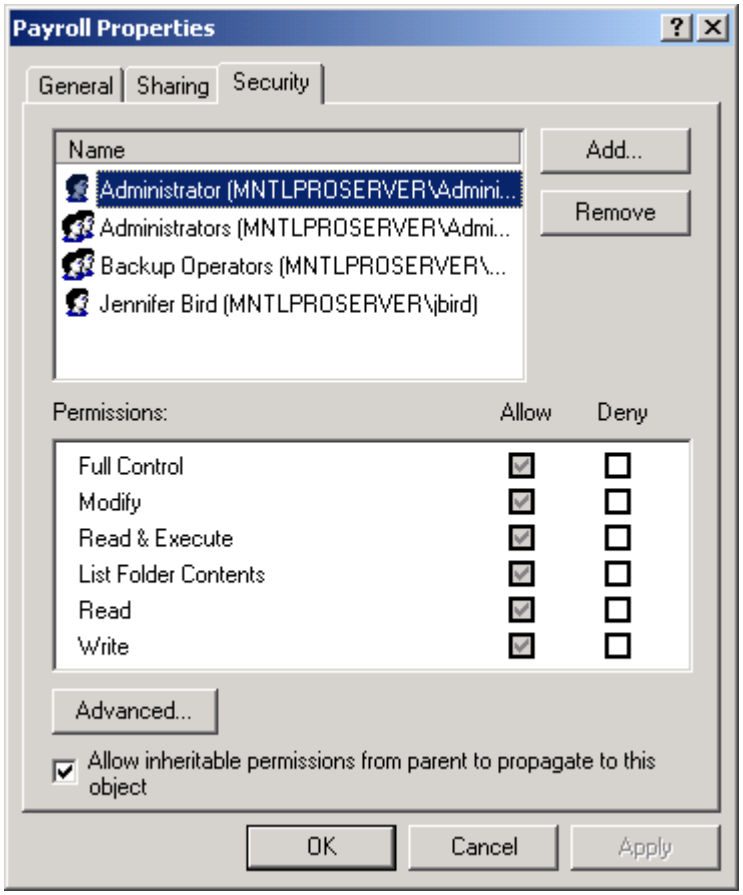


Payroll Properties windows
Security tab

Note: Only Victoria and Jennifer should have access to this shared folder. Earlier, a group was created with Victoria and Jennifer as members of that group.

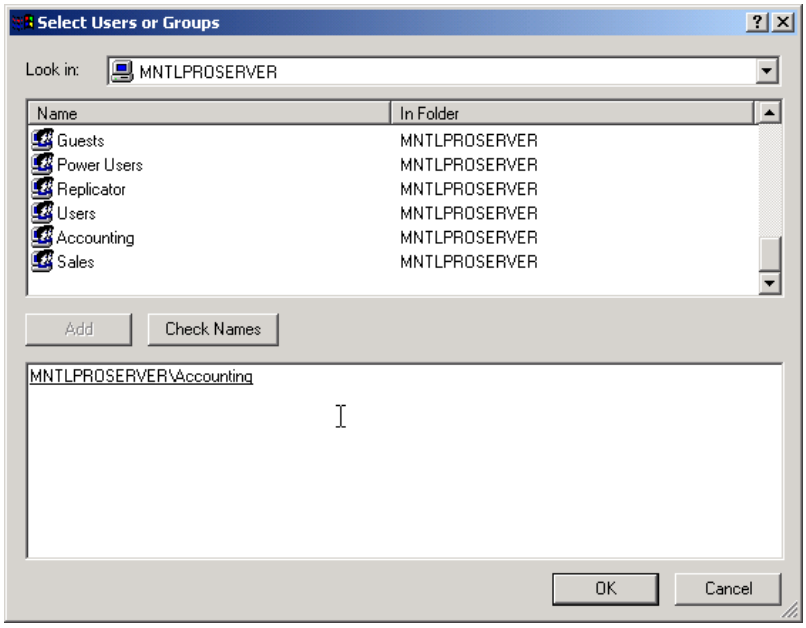
Follow the instructions below to accomplish this task.

22. Click the **Add** button



Select Users or Groups window

23. Scroll the name field until Accounting is located.
24. Select Accounting
25. Click the **Add** button
26. Click **Ok**

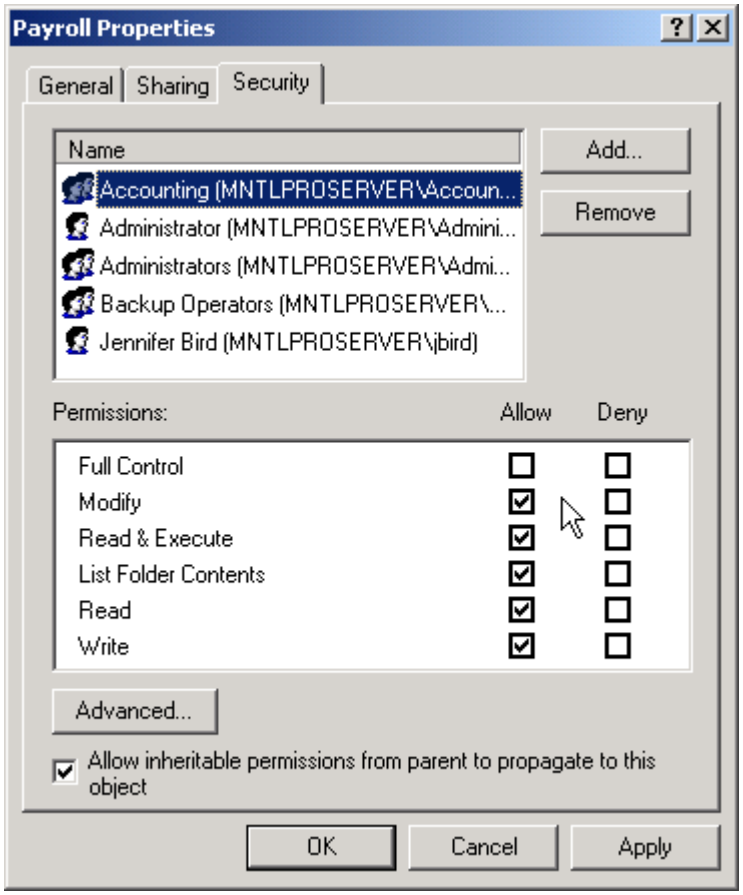


Payroll Properties window
Security tab

27. Select the Accounting Group.
28. Place a check mark in the *Modify* box.
29. Click **Apply**
30. Click **Ok**

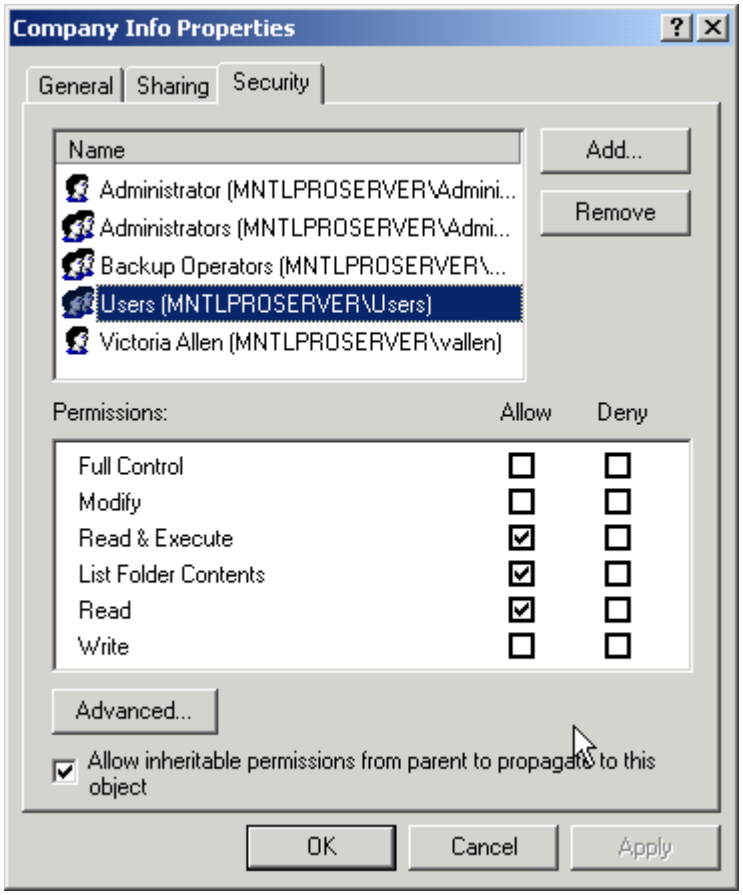
Repeat this process for the Sales_Data folder located inside the rrhodes folder. Assign the Sales group access to this folder.

Repeat this process for the Company Info folder located inside the vallen folder. Assign the Users group access to this folder. *Note: Do not check the box next to Modify. See image below.*



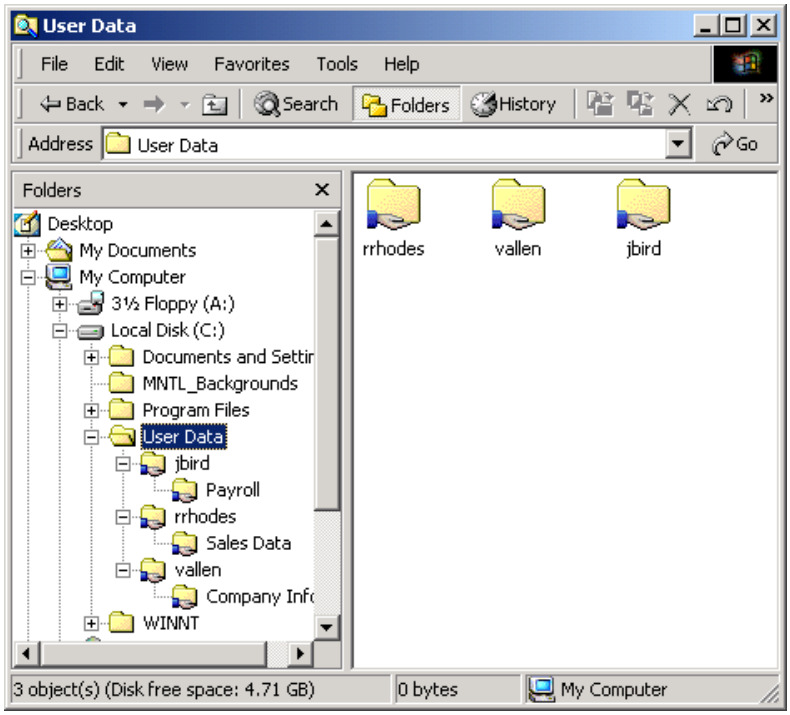
Payroll Properties window
Security tab

Permissions view for Company Info folder.



User Data window

The folder structure should now match the image shown.



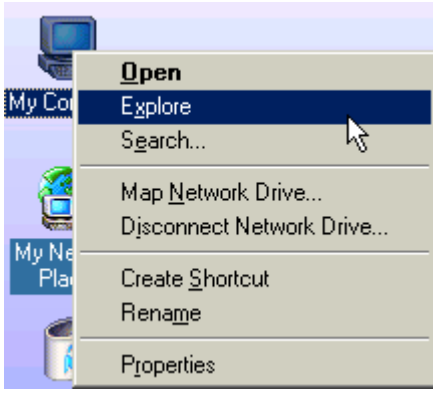
Step Six: Transferring Data from the users machine to the server

Now that shares have been set up on the server, the data must be transferred from each workstation to the server.

Directions: Follow the instructions listed below. Each person will complete the following steps for their person. The following example uses Victoria Allen. Substitute your person's information accordingly.

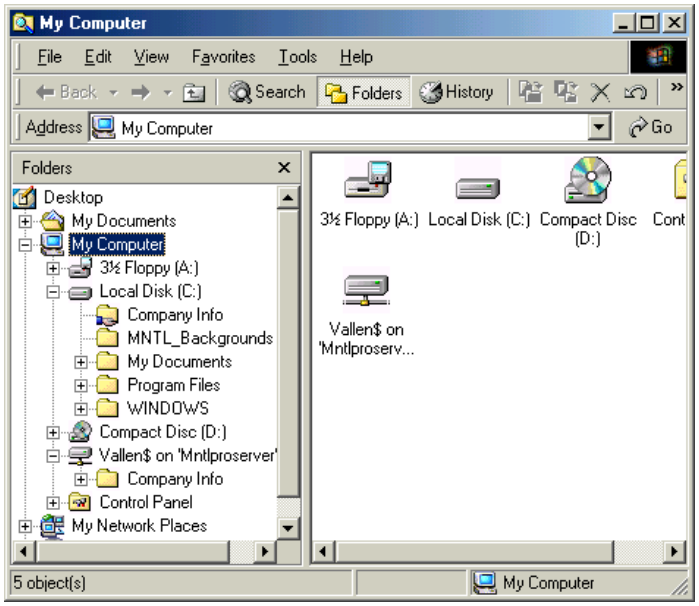
Desktop

1. Right Click on My Computer
2. Select **Explore**



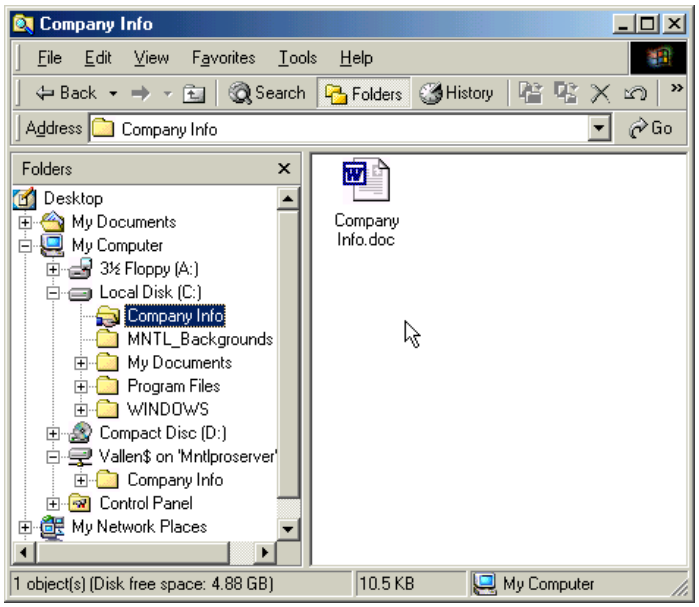
My Computer window

3. Click the (+) sign next to the Local Disk (C:) and the (+) (H:) drive



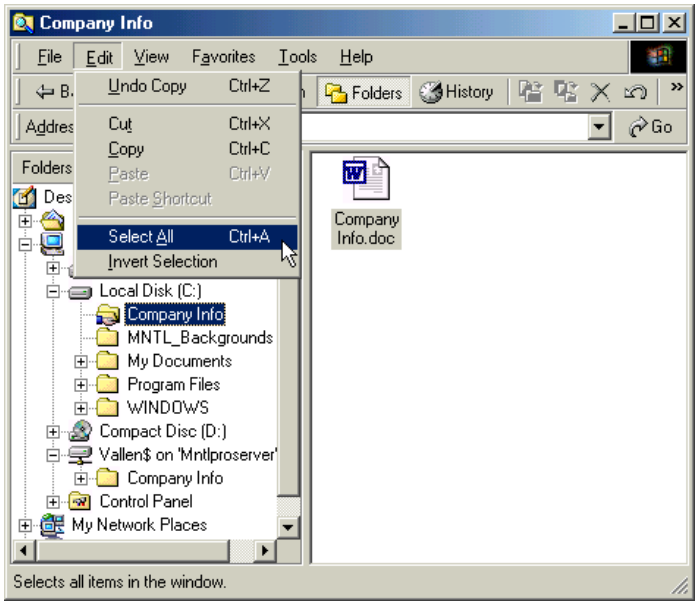
My Computer window

4. Select the Company Info folder



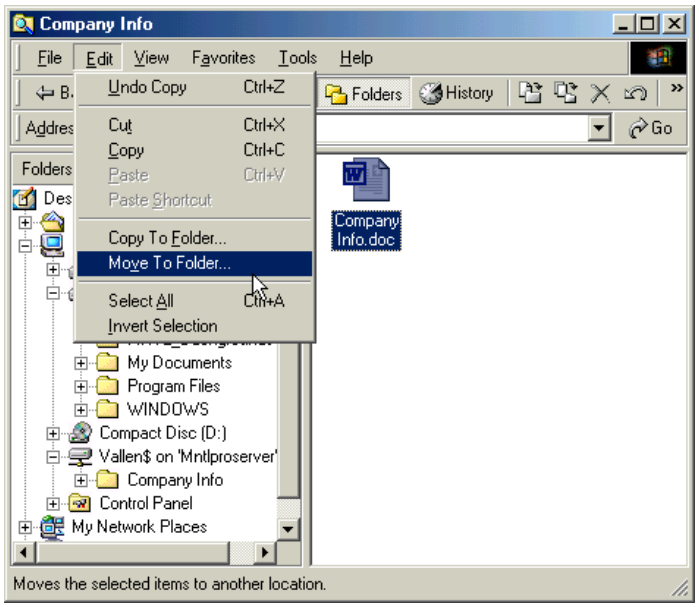
Company Info window

5. Click the **Edit** menu
6. Click **Select All**



Company Info window

7. Click the **Edit** menu
8. Click **Move to Folder**…

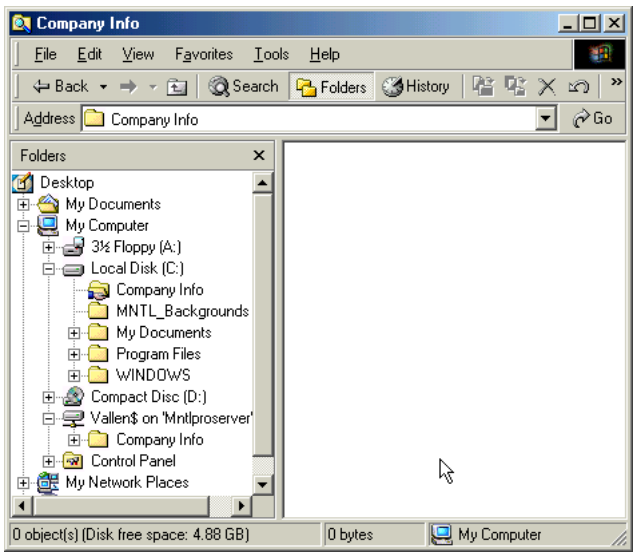


Browse For Folder window

9. Expand my computer by clicking the (+) sign
10. Expand the H drive by clicking the (+) sign
11. Select Company Info
12. Click **Ok**

Company Info window

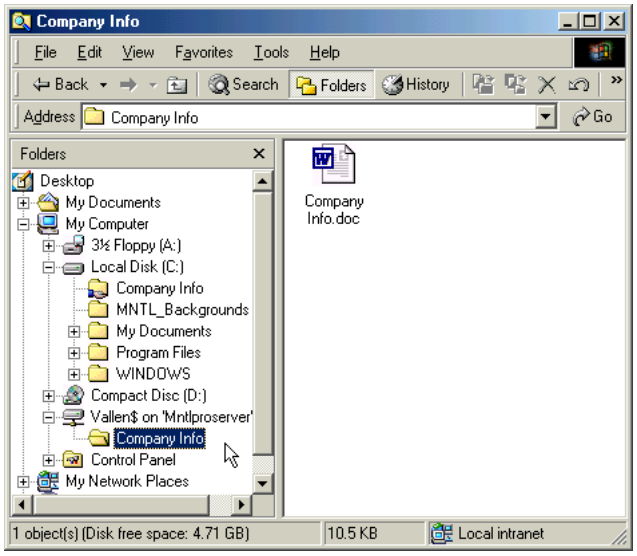
The file has been moved.



Company Info window

13. Select the Company Info folder inside the H drive
14. The file has been moved.

Do not close this window.



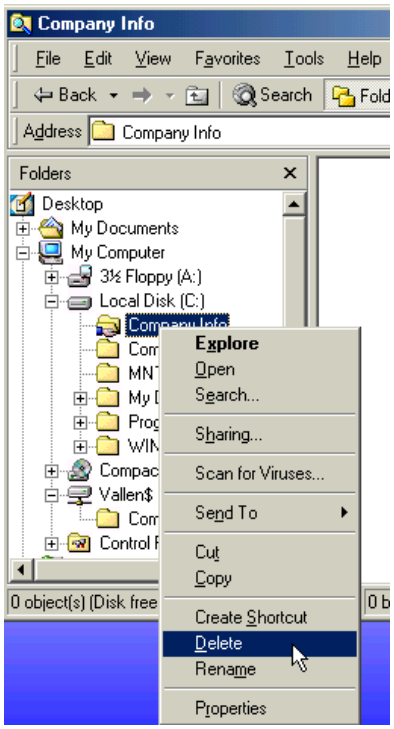
Step Seven: Removing local shared folders

Once the data has been transferred from the workstation to the server, the shares on the workstation are no longer needed. Therefore they will be removed in this activity.

Directions: Follow the instructions listed below. Each person will complete the following steps for their person. The following example uses Victoria Allen. Substitute your person's information accordingly.

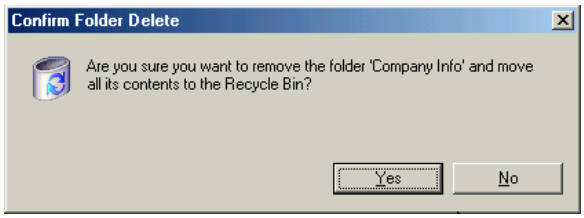
Company Info window

1. Right click on Company Info
2. Select **Delete**



Confirm Folder Delete window

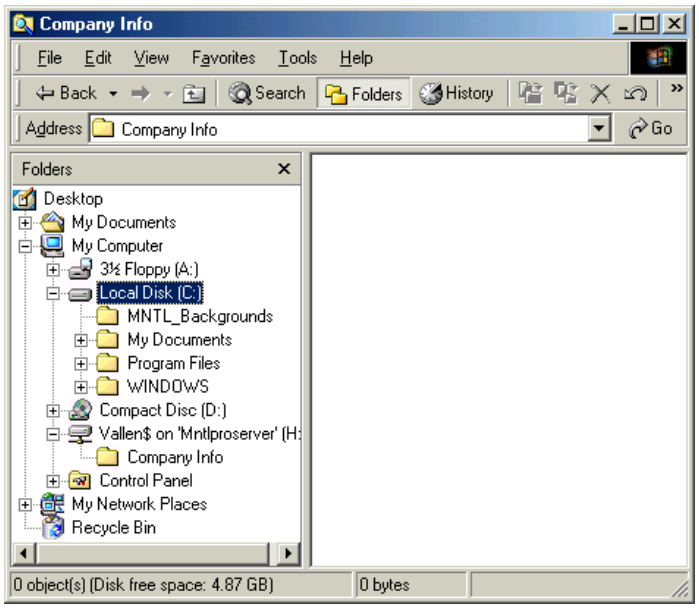
3. Click the **Yes** button



Sharing window
4. Click the **Yes** button

Company Info window

The shared folder has been deleted.



Backing up data:

According to this scenario, files are to be moved to a filer server for the purpose of backing up the data. Unfortunately, we do not have the hardware necessary to complete the backup process.

However, we will take this opportunity to review a small amount of information concerning backing up data.

How can data be lost?

- You may make a mistake and delete a file or directory.
- Your hard disk may be damaged or broken or corrupted by the system.
- Your Computer or disk may even be stolen!
- You may have a minor (or major) disaster with fire or flood or tea or sticky cakes etc. which damages your computer or disk.

Backup devices

- Mirrored Drive: One of the easies ways to back data up is to place a second hard drive in your files server. This second drive will mirror all the data on the first drive. This process is relatively simple however it does not allow for recovery from certain disasters. For example: Flood, Theft, Fire etc…
- Tape Backup: Arguably the most popular and secure method for backing up data is the Magnetic or Digital Audio Tape. This allows data to be backed up to a tape. The tape is then removed from the server and stored in a secure location; preferably away from the physical location of the server.
- Zip Drive: This method provide the ease of a mirrored hard drive with the security of storing the data in an off site location. The hardware is less

expensive than tape, however, the Zip disk do not hold the same about of data the tapes hold.

- CDRW: Several years ago this method of backing up data would have been unheard of. However, today cost and re-writability of media, this option is now possible.

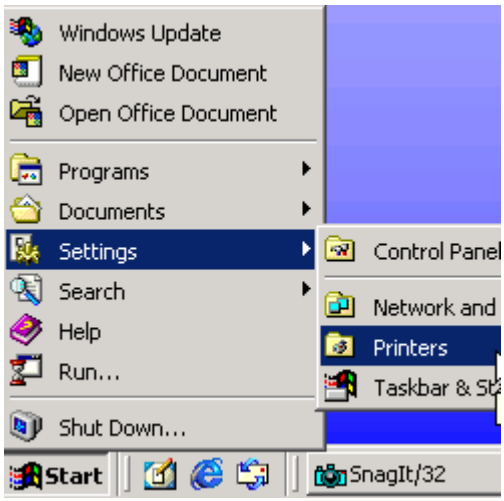
Step Eight: Setting up a Local Printer

Directions: Follow the instructions listed below.

In addition to being able to save data to a central location, the Shared Printer can be moved from Jennifer's computer to the server. Remove the parallel cable for Jennifer's workstation and plug it into the server.

Desktop

19. Click **Start**
    Choose **Setting**
    Select **Printers**

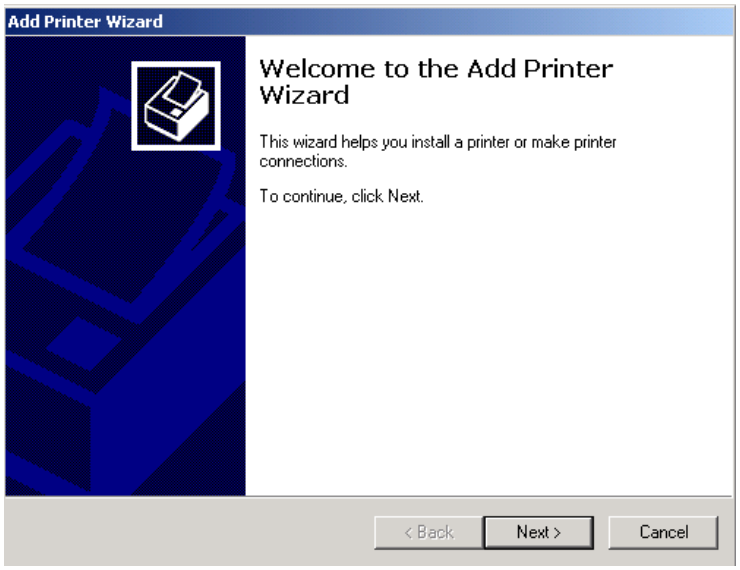


Printers window

20. Double Click the Add Printer icon.

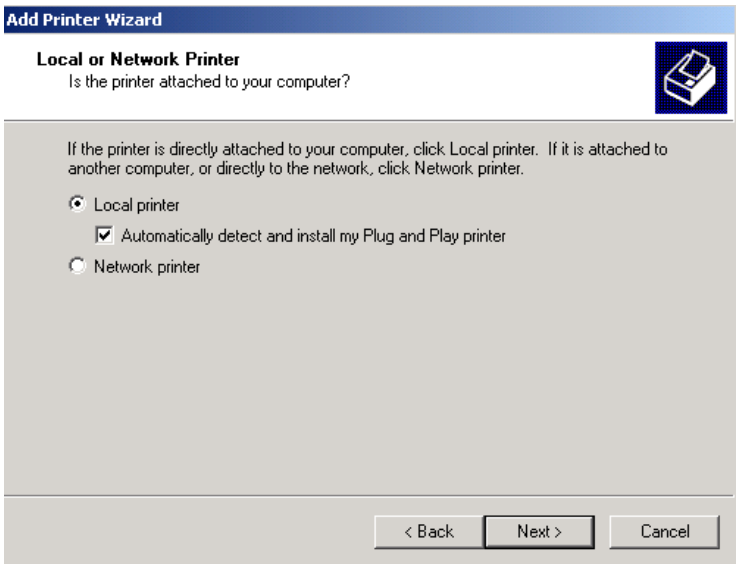
Add Printer Wizard

21. Click **Next**



Add Printer Wizard

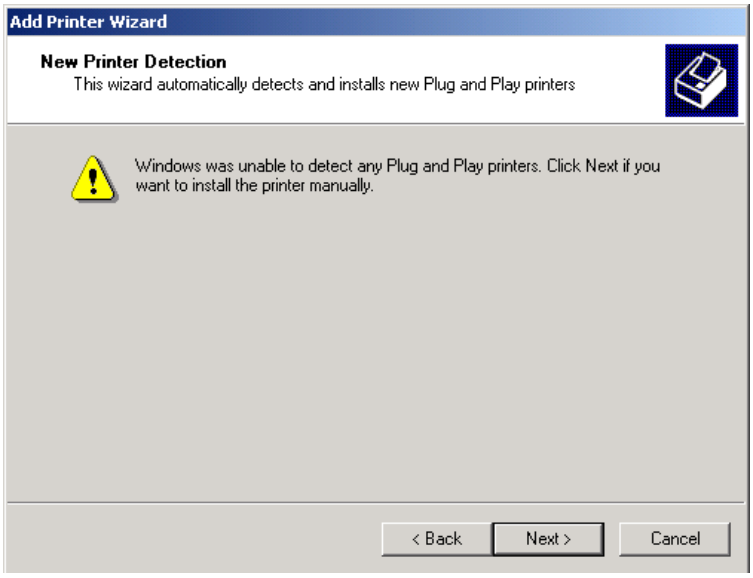
22. Make sure the radio button for Local printer and the check mark for *Automatically detect and install my Plug and Play printer* is selected. Click **Next**



Add Printer Wizard window

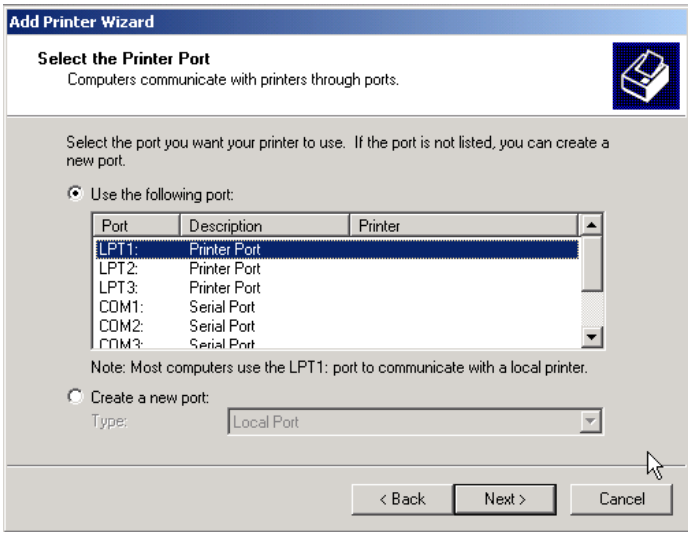
In the case of the HPIIP printer, it is not plug in play. Other printer may or may not give you this window.

23. Click **Next**



Add Printer Wizard window

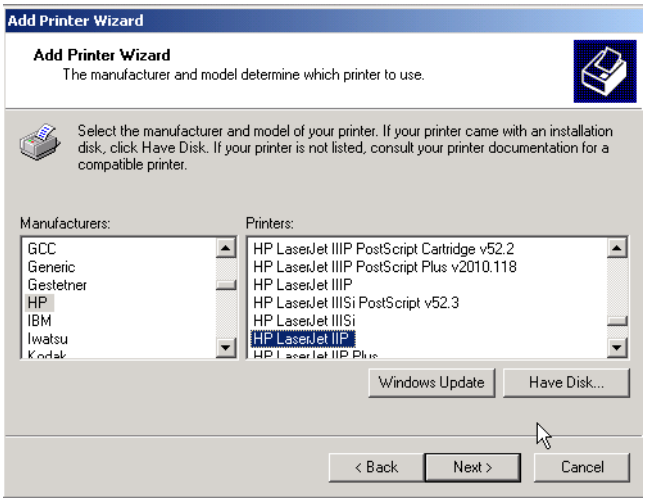
24. Select LPT1: Printer Port
25. Click **Next**



Add Printer Wizard

26. Scroll the *Manufacturers* filed (left side of window) to locate the manufacture of your printer. Select HP LaserJet IIP.
27. Scroll the *Printers* field. Select your printer.
28. Click **Next**

Note: You will need to look at the printer you were supplied with.

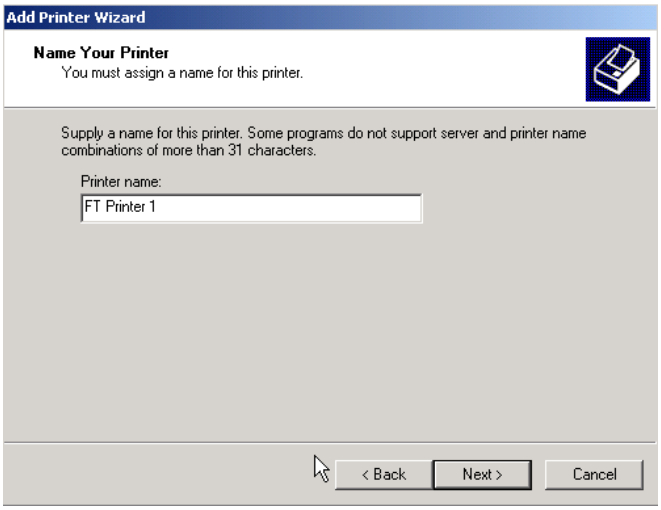


This example shows a HP LaserJet IIP

Add Printer Wizard

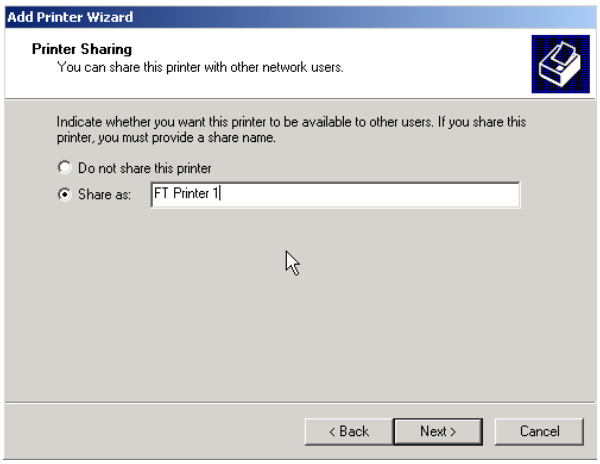
29. *Printer Name*
    `Type FT Printer 1`
30. Click **Next**

Note: By default, windows will name the printer the same as the brand and model. If a company was to purchase several of the same printers, this would become quite confusing. This is the reason for changing the name above.



Add Printer Wizard window

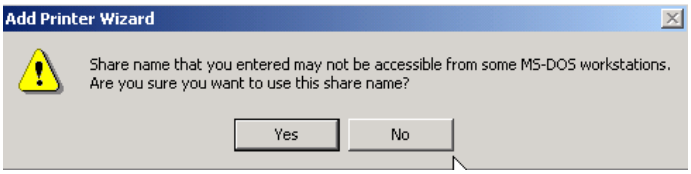
31. Select the radio button next to *Share as*:
32. Type `FT Printer 1` in the field
33. Click **Next**



Add Printer Wizard (Alert) window

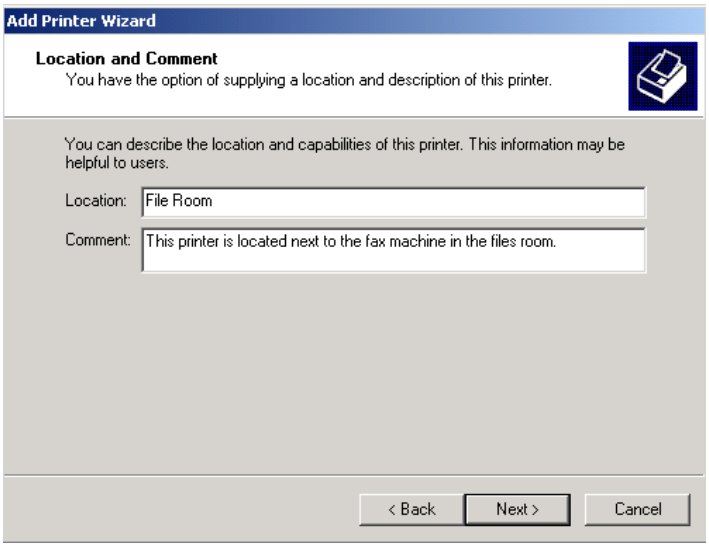
MS-DOS does not like spaces in file names. Because DOS only machines are not being used on this network, this name is acceptable.

34. Click **Yes**



Add Printer Wizard window

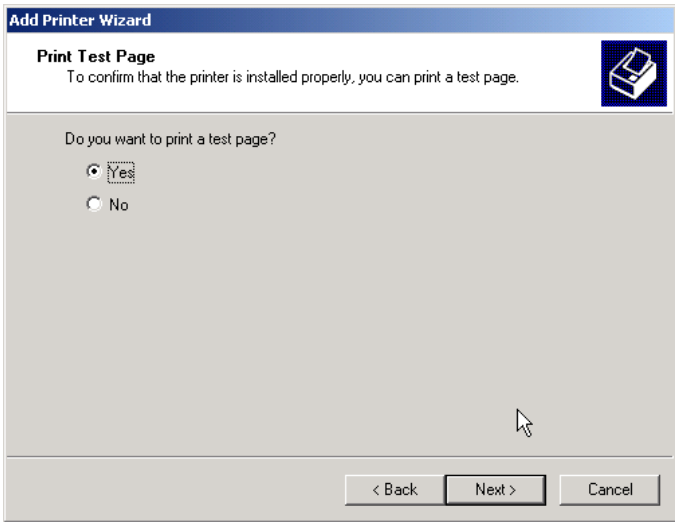
35. Type `File Room` in the *Location:* field.
36. Type `This printer is located next to the fax machine in the files room`. In the *Comment:* field.
37. Click **Next**



Add Printer Wizard window
Do you want to print a test page?

38. Make sure the radio button for *Yes* is selected.
    Click **Next**

Note: This will always ensure the printer is installed and functioning correctly.



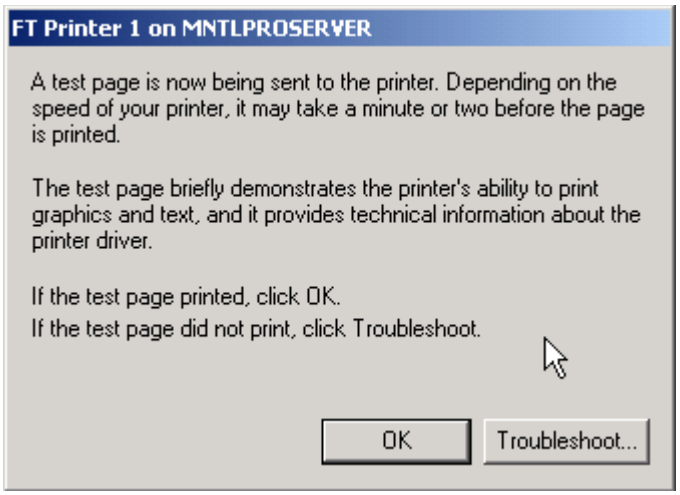
Add Printer Wizard window

39. Click **Finish**

    Windows will begin copying the necessary files to the computer.

Test Page Alert window

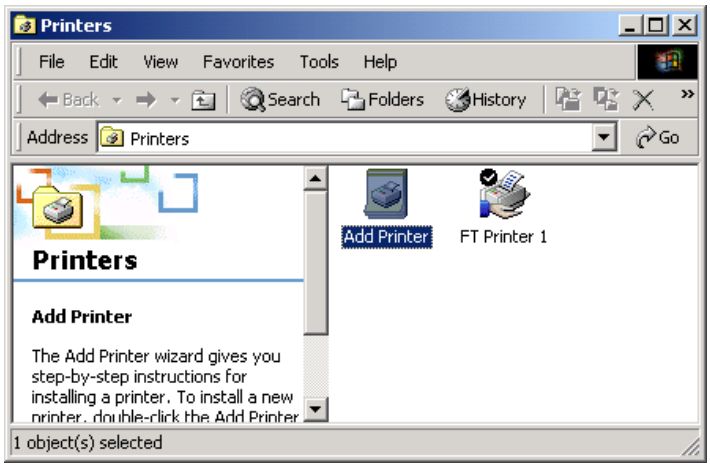
40. Click **Ok** to close the window once the test page as successfully printer.



Printer window

41. The new printer icon will now be displayed in the Printer folder.

Note: The printer share is setup.



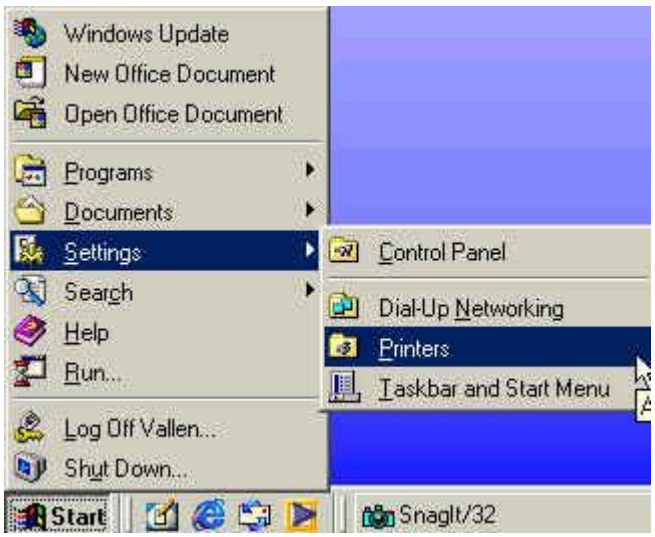
Step Nine: Removing a Printer

Now that the printer has been moved from the workstation to the server, you must delete the printer from your current workstation. Once the printer has been deleted, you must add the printer back to your workstation.

Directions: Follow the instructions listed below at each workstation.

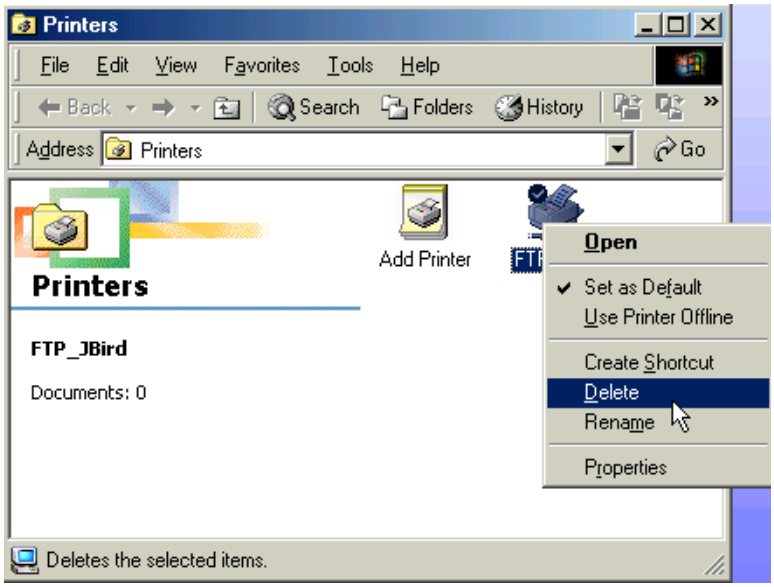
Desktop

1. Click **Start**, choose **Setting**, select **Printers**



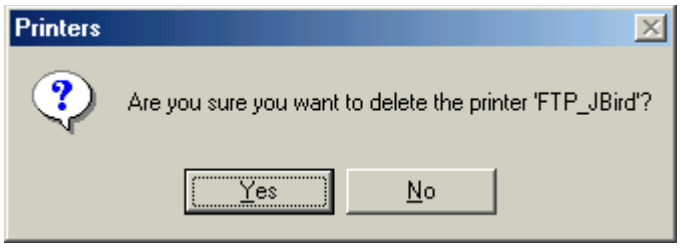
Printers window

2. Right click on the FTP_Jbird printer icon.
3. Select **Delete**
4.



Printers window

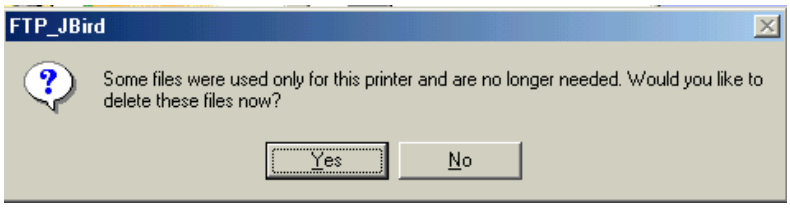
5. Click **Yes**



FTP_Bird window

The window asks if you would like to remove files used by this printer. Because the printer location has changed, not the printer, these files should not be deleted.

6. Click **No**

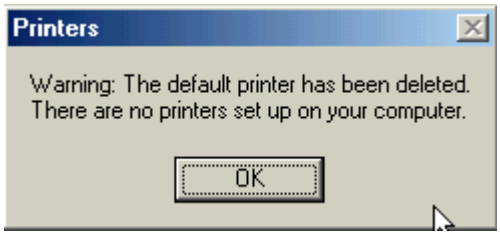


Printers window

7. Click **Ok**

Repeat this process on all workstations.

Note: Do not do this on the server.

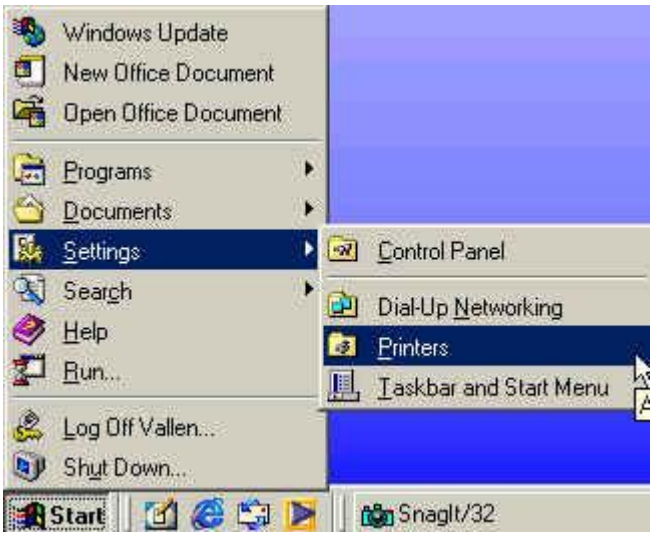


Step Ten: Adding a Shared Printer to a Workstation

Directions: Follow the instructions listed below at each workstation.

Desktop

1. Click **Start**, choose **Setting**, select **Printers**



Printers window

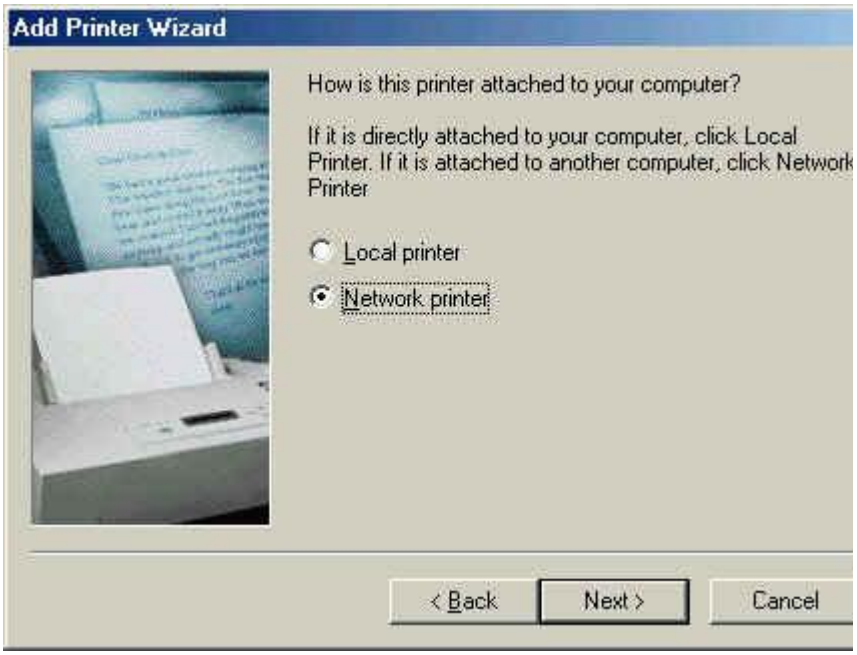
2. Double Click Add Printer

Add Printer Wizard window

3. Click **Next**

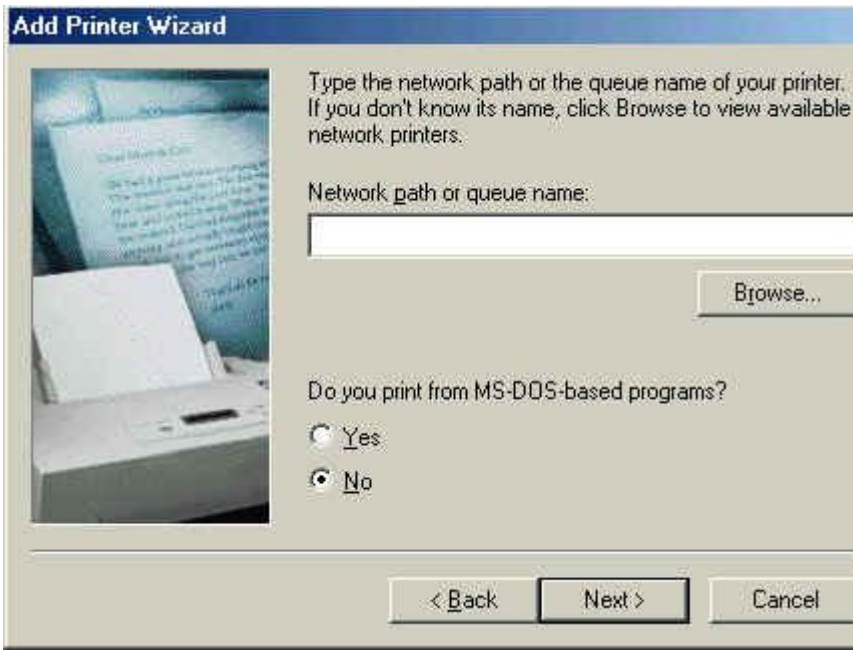
Add Printer Wizard window

4. Make sure the radio button for *Network printer* is selected. Click **Next**



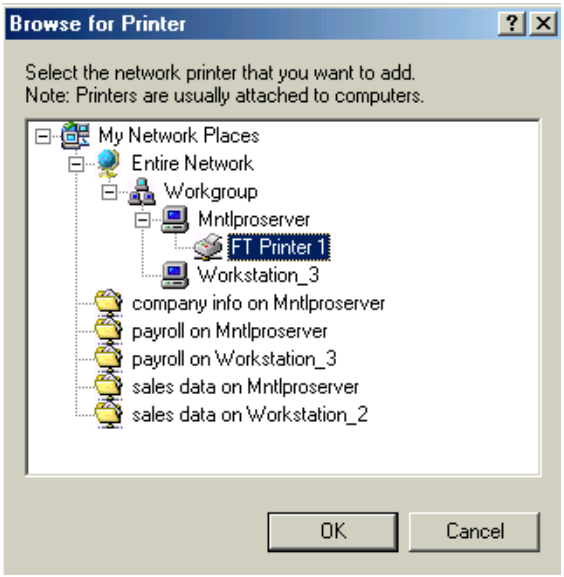
Add Printer Wizard window

5. Click the **Browse** button.



Browse for Printer window

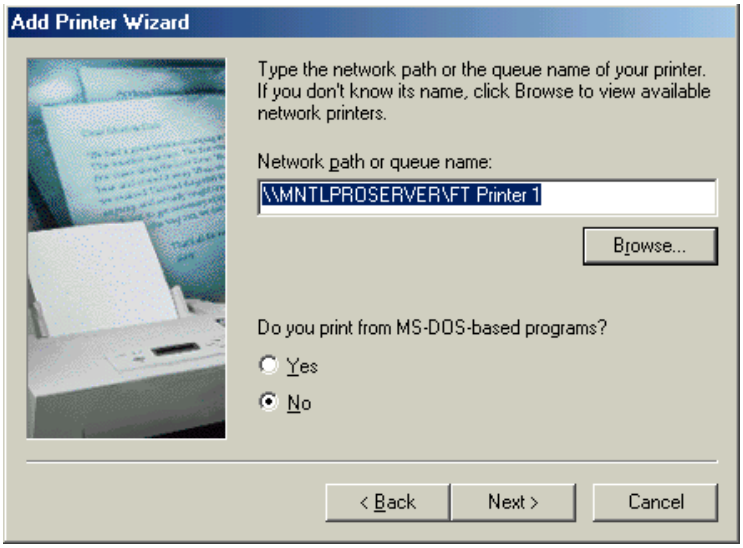
6. Expand the view of the network by clicking on the plus to the left of Entire Network.
7. Click Workgroup
8. Click Mntlproserver
9. Click FT Printer 1
10. Click **OK**



Add Printer Wizard window

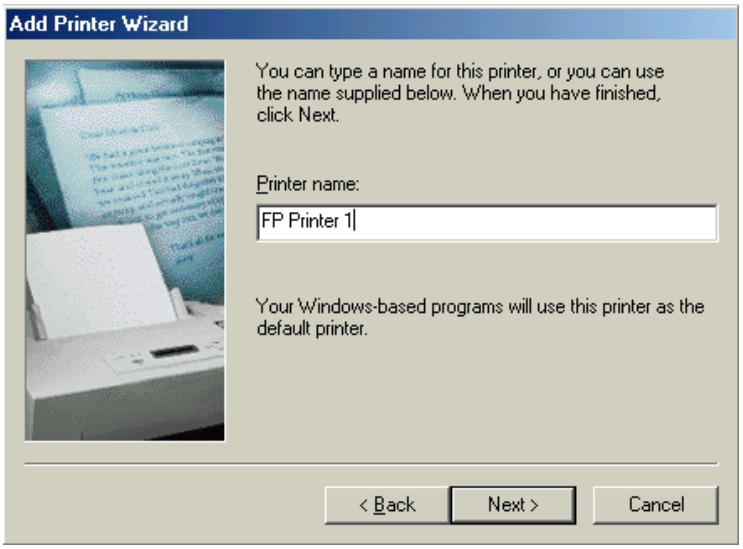
11. Click **Next**

Notice the information in the Network path or queue name field.



Add Printer Wizard window

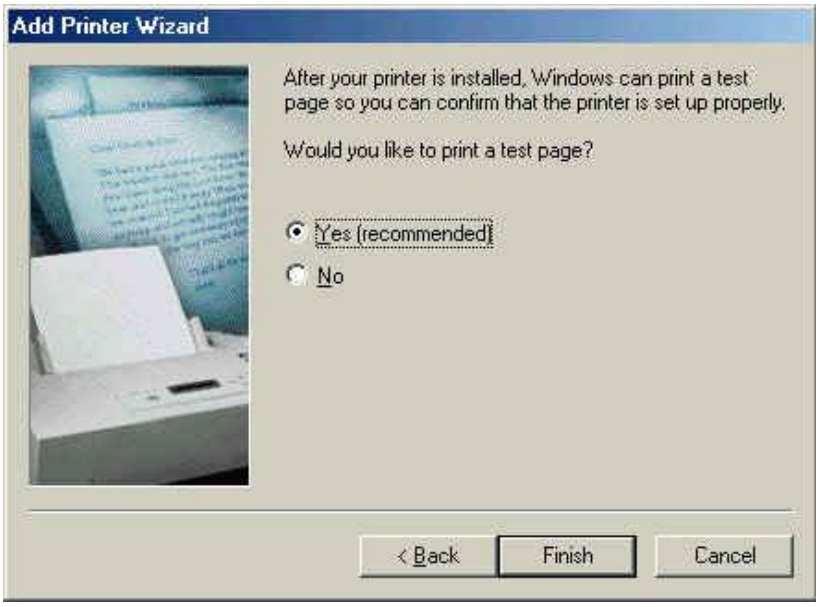
12. Type `FP Printer 1` in the Printer name field.
13. Click **Next**



Add Printer Wizard window
Would you like to print a test page?

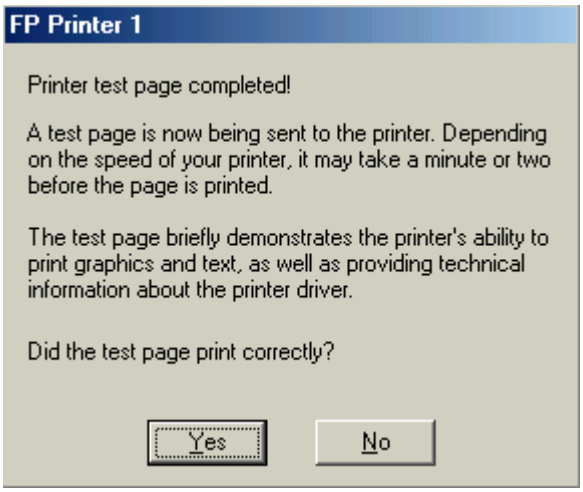
14. Make sure the radio button for *Yes (recommended)* is selected.
    Click **Finish**

    Windows will begin copying the necessary files to the computer.



Test Page Alert window

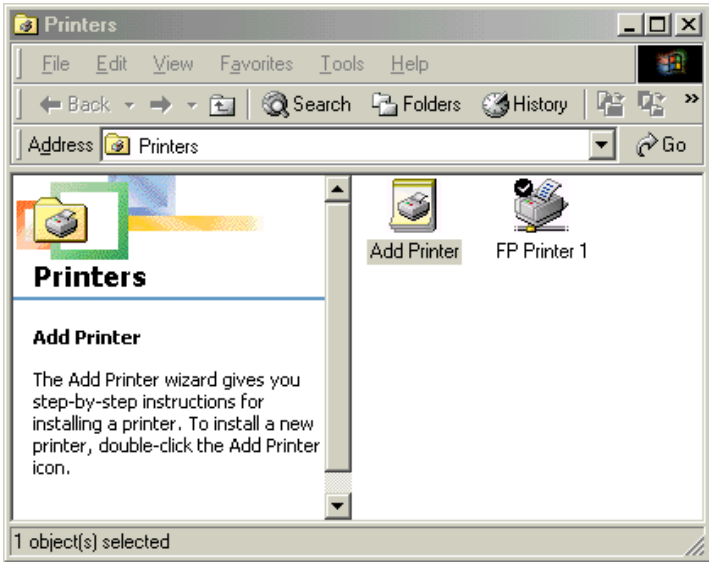
15. Click **Yes** to close the window once the test page as successfully printer.



Printers window
The FP Printer 1 will now be displayed

16. Close the Printer window.

17. Repeat this process for the other workstations.



Step Eleven: Mapping a Network Folder

Why do we need to map network drives? In many cases it is not necessary to map a network volume to access it. It can be accessed using Network Neighborhood to locate the server and volume (share) then the file. However, if a volume is assigned a local drive letter, then it can be accessed by simply using that letter, for Example H. There is also one more advantage. When a network volume is assigned a drive letter, it will appear in the drop down drive box so that you can click on the drive and immediately see what is on it when Opening or Saving files.

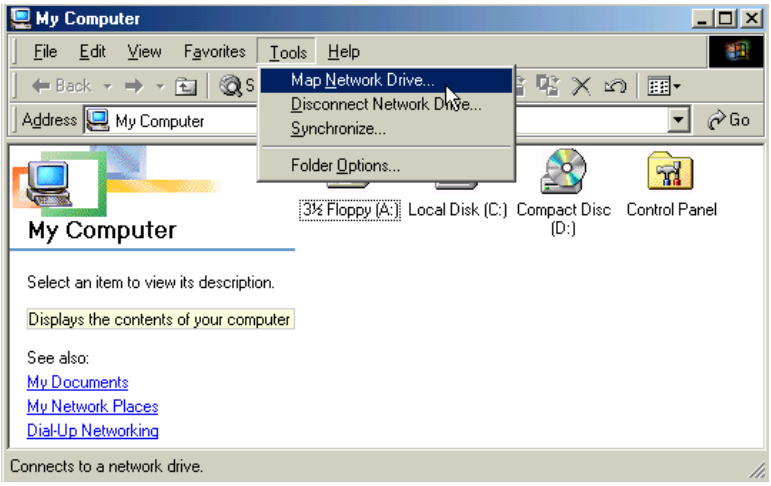
Directions: Follow the instructions listed below.

Desktop

1. Double Click My Computer

My Computer window

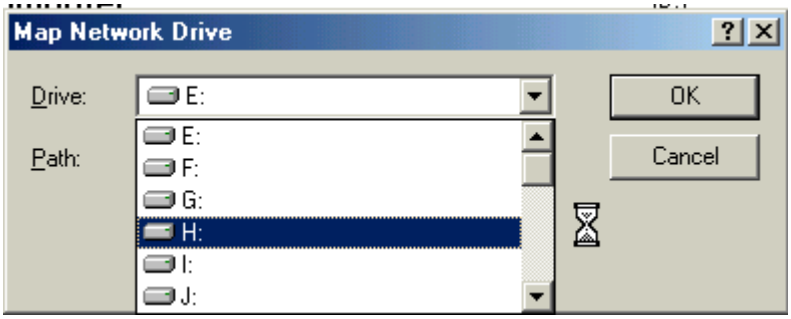
2. Click Tools
3. Select Map Network Drive



Map Network Drive

4. Click the down arrow next to the Drive field.
5. Select H:

It is possible to use a drive letter other than H. However, H has become a default standard in many network environments.



Map Network Drive

6. Type `\\MNTPROSERVER\vallen$` in the *Path* field.
7. Place a check in the *Reconnect at logon* box
8. Click **Ok**

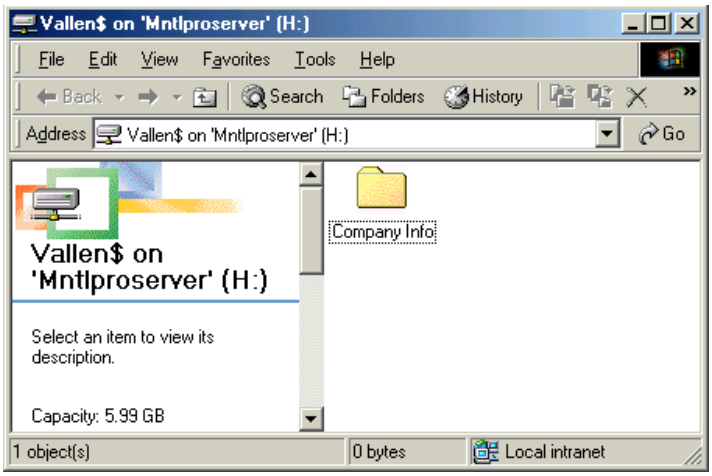
Note: Substitute the jbird or rrhodes at the appropriate workstatons.

Vallen$ on Mntlproserver (H:) window

This window will appear on the screen.

Note: jbird and rrhodes will see a similar screen.

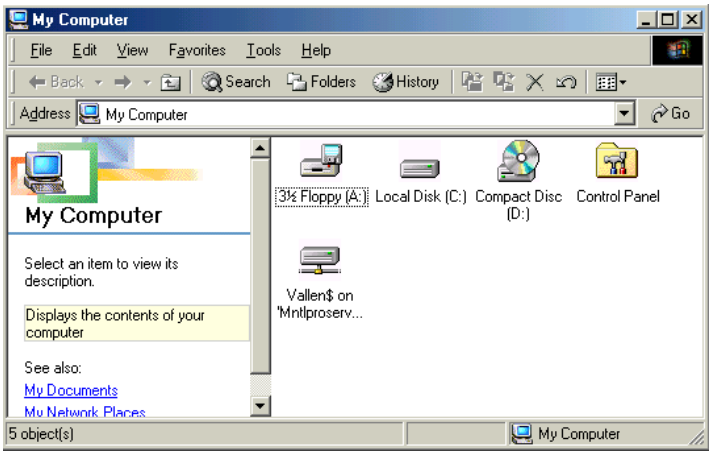
Close this window



My Computer window

Double Click My Computer

The mapped drive will now be displayed in the My Computer window.



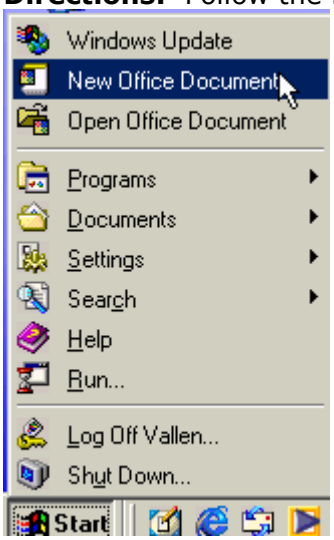
Step Twelve: Saving data to a Network Folder

It is important to save data to the network folder so it will be backed up. Backup solutions are not cost effective to keep on each machine. Therefore, saving data to a network folder allow an organization to deploy one backup solution on the file server that the data is stored on.

Directions: Follow the instructions listed below.

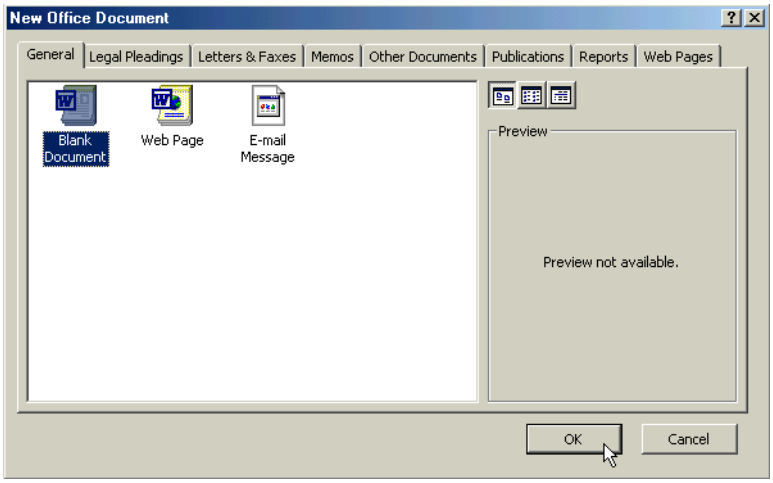
Desktop

1. Click **Start**
2. Click **New Office Documents**



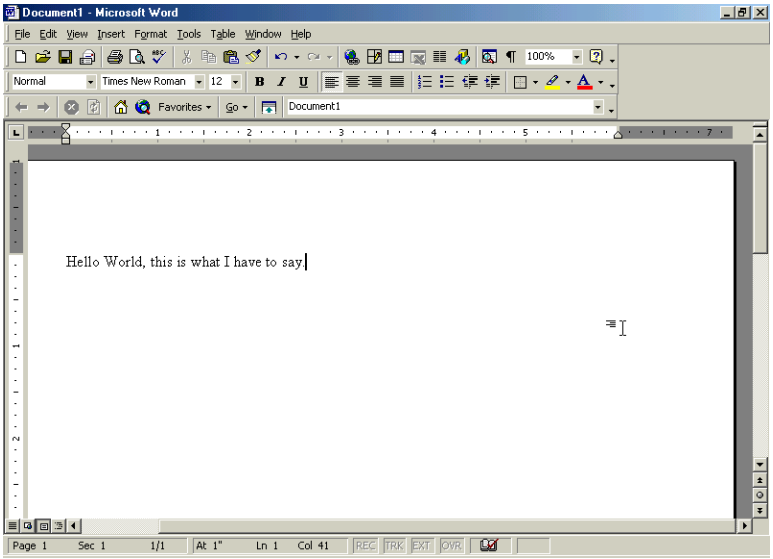
New Office Document window

3. Double click Blank Document



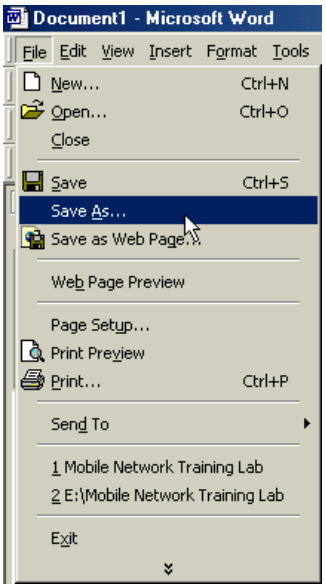
Document 1 window

4. Type: `Hello World, this is what I have to say.`



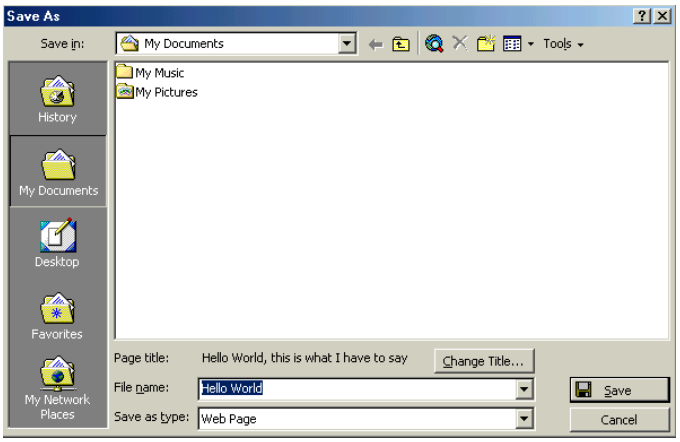
Document 1 window

5. Click File
6. Select **Save As**…



Save As window

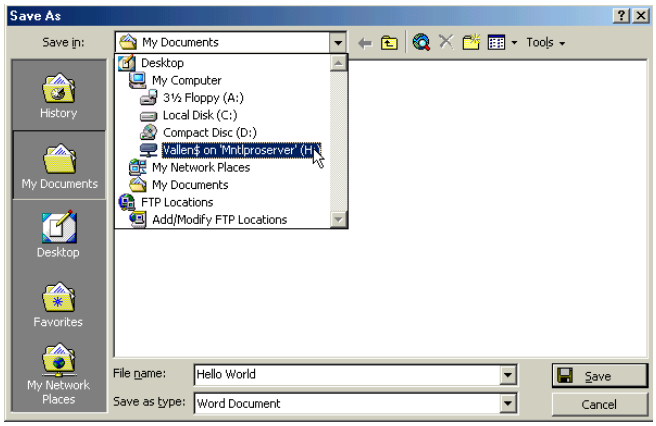
Note: This opened to My Documents which is located on the C drive of the local machine.



Save As window

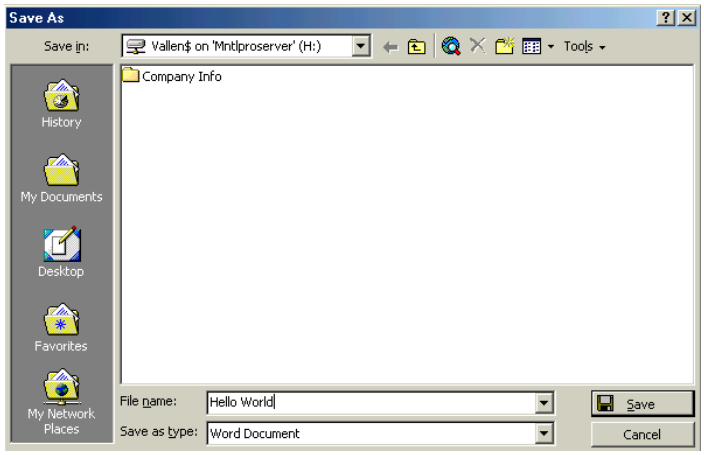
7. Click the down arrow next to the Save in: drop box
8. Select vallen$ on… (H:)

Note: Each person will choose the name for their user



Save As window

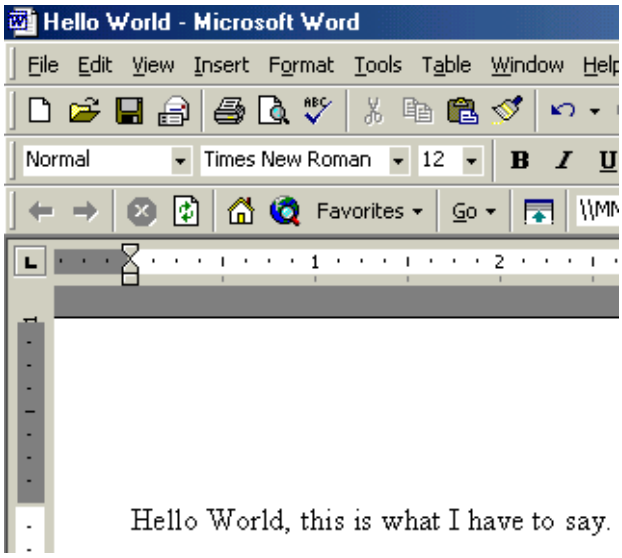
9. Click the **Save** button.



Hello World – Microsoft Word window

The document has now been saved to the "H" drive which is located on the server.

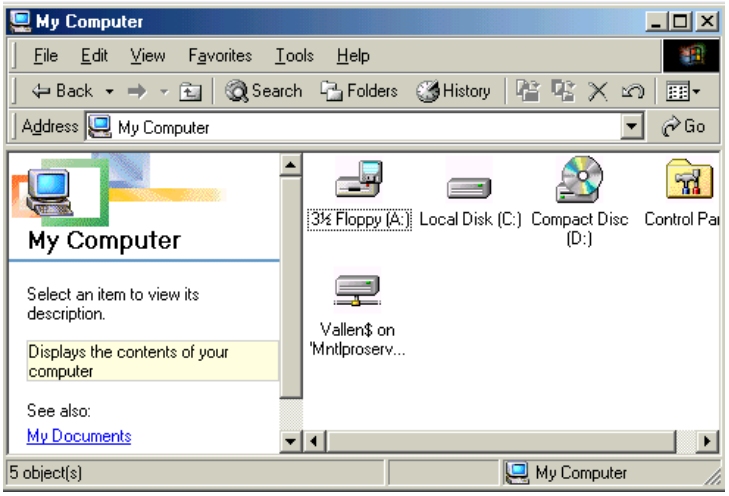
10. Close MS Word



Open My Computer

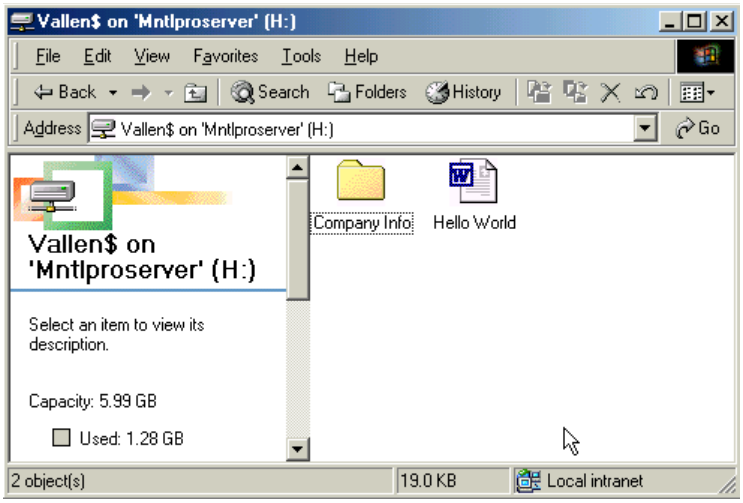
My Computer window

11. Double click the "H" drive



Vallen$ on...(H:)

The Hello World document is now visible



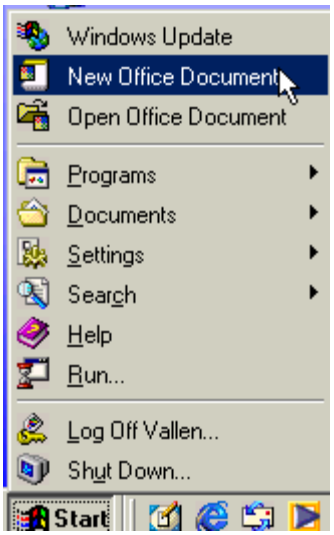
Step Thirteen: Changing My Documents Default location

As seen in the above exercise, it requires a conscious act to save a file to the network drive. Often users will get in a hurry and inadvertently save a file to their local machine. Files saved to the local machine will not be backed up. To alleviate this problem. Word and many other software packages allow the default save location to be changed. In this exercise, you will change the default save location to the H drive.

Directions: Follow the instructions listed below.

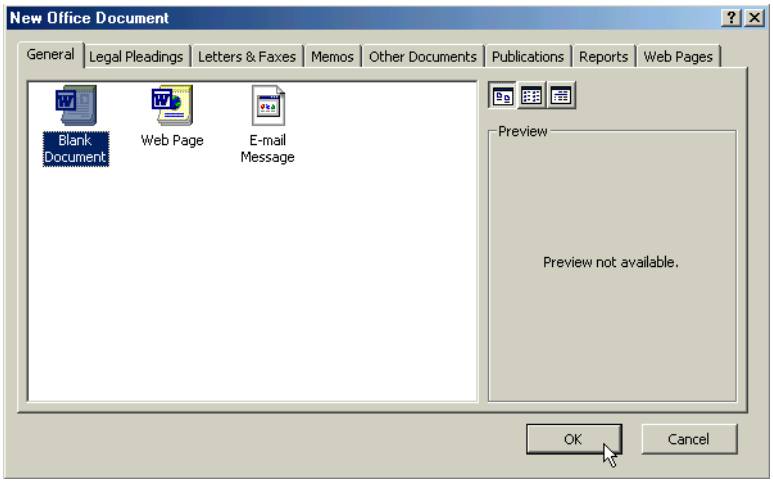
Desktop

1. Click **Start**
2. Click **New Office Documents**



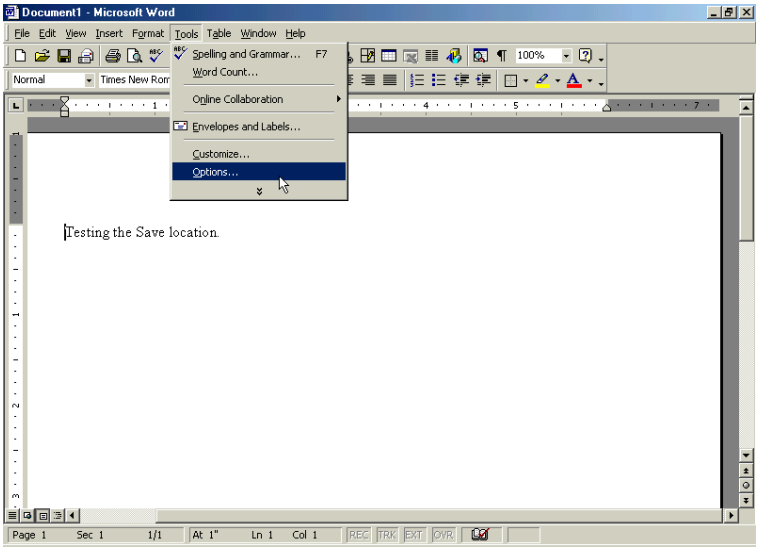
New Office Document window

3. Double click Blank Document



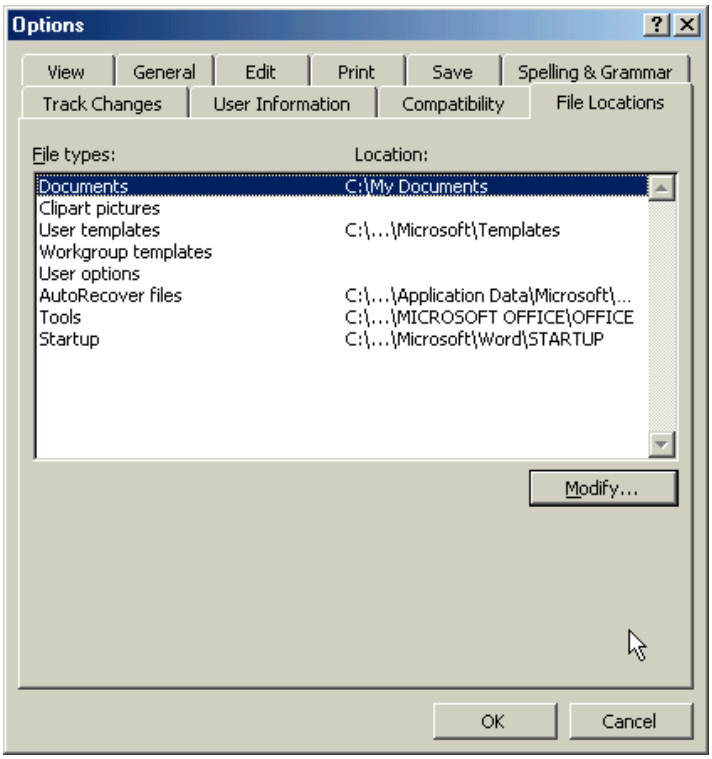
Document 1 window

4. Type: `Testing the Save location.`
5. Click Tools
6. Select Options



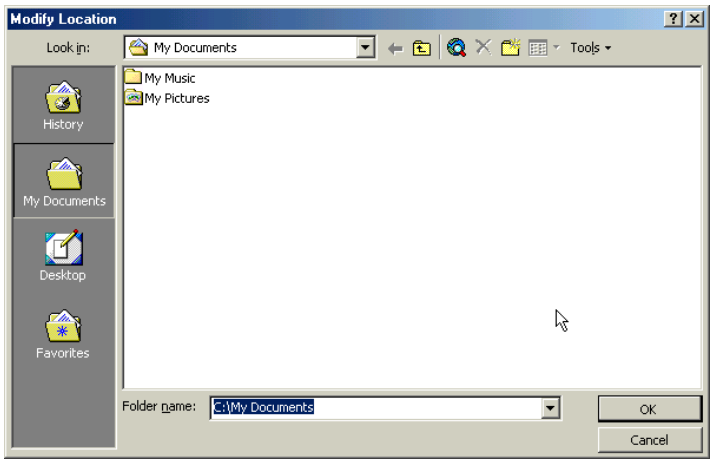
Options window
File Locations tab

7. Click the File Locations tab
8. Select Documents form the *File types*: field
9. Click the **Modify**… button



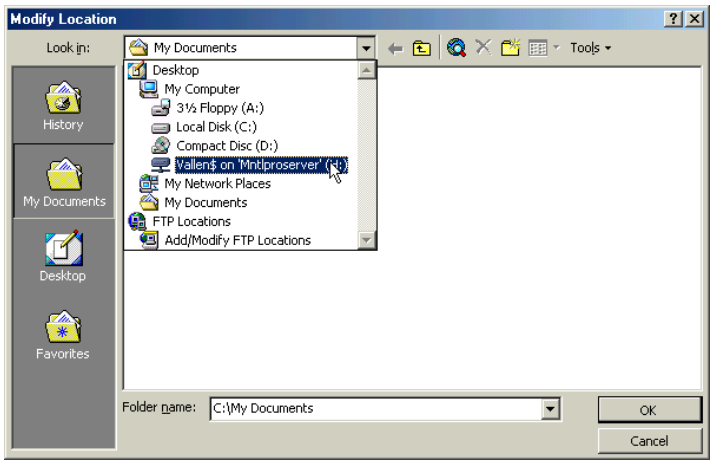
Modify Location window

10. Click the down arrow next to the Look in: drop down box



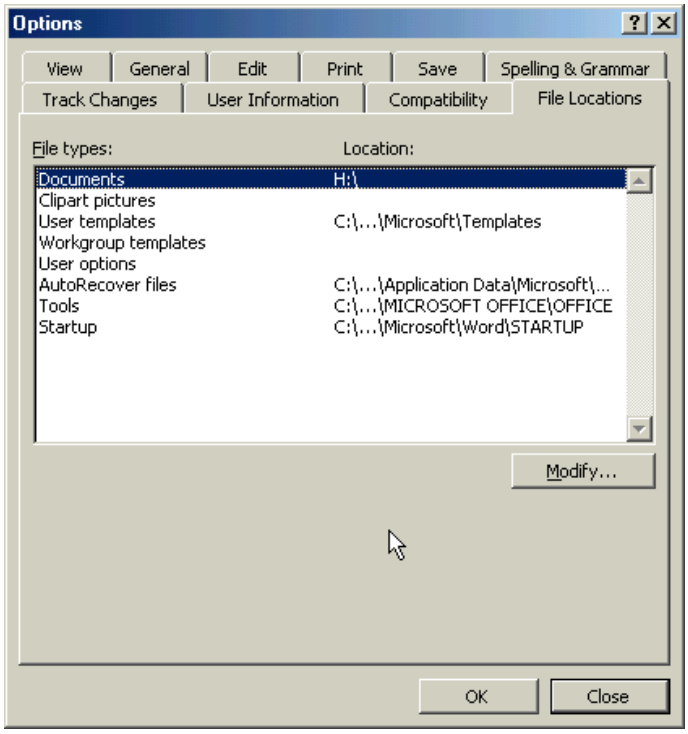
Modify Location window

11. Select the H drive
12. Click **OK**

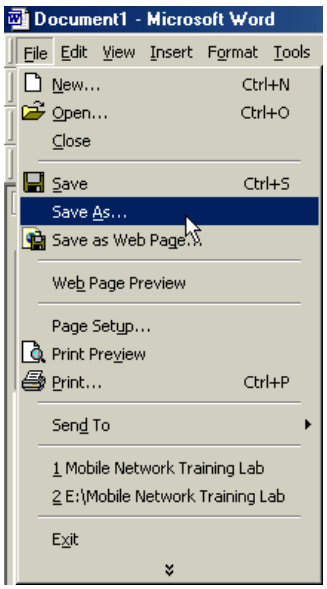


Options window
The options window will look like the image shown.

13. Click **Ok**



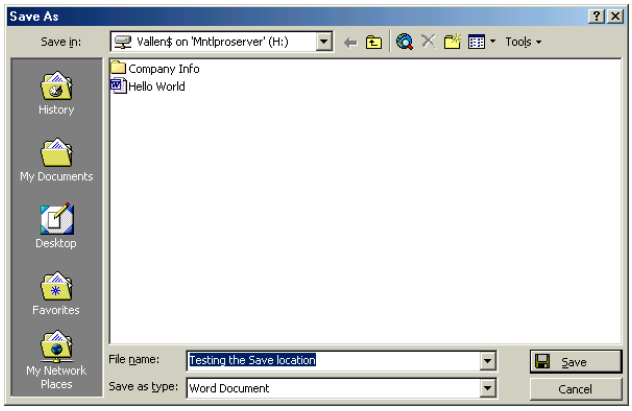
Document 1 window
12. Click **File**
13. Select **Save As**...



Save As window

Note: The new default location to save a file is the "H" drive.

It is not necessary to save the document. This exercise is only to make sure the file is being saved to the H drive.



Step Fourteen: Connecting to a Shared Folder

Many organizations will share files between users. These files can be saved to a floppy disk and handed to the other person. These files can also be email to the other person. However, utilizing the file sharing capabilities of a network, the same file may be saved to a folder that more than one person have access to. Earlier, you set up a folder share to be used between multiple people. In this exercise you will map to that folder.

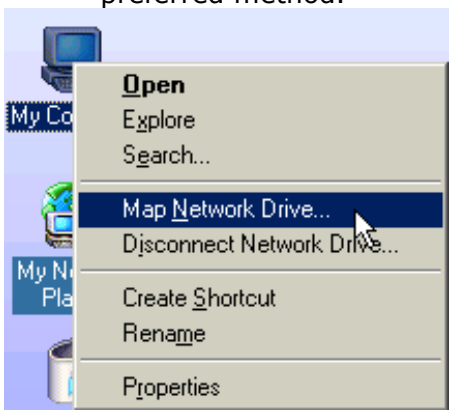
Directions: Follow the instructions listed below.
There a two methods to connecting to a shared folder:

1. Map to the folder as a network drive.
   If the user intends to read and save data to this folder often, mapping a folder to a drive is the preferred method
2. Open the folder from Network Neighborhood.
   If the user only intends to read and data periodically, opening the folder form Network Neighborhood is the preferred method.

Method 1
Mapping to the Company Info folder as the K drive

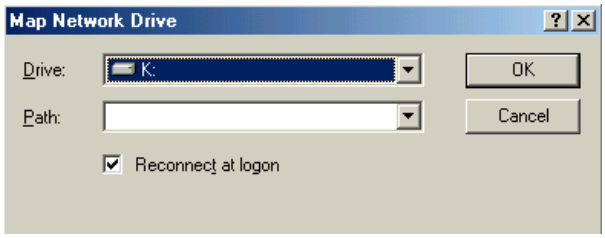
Desktop

1. Right Click on My Computer
2. Select Map Network Drive…



Map Network Drive window

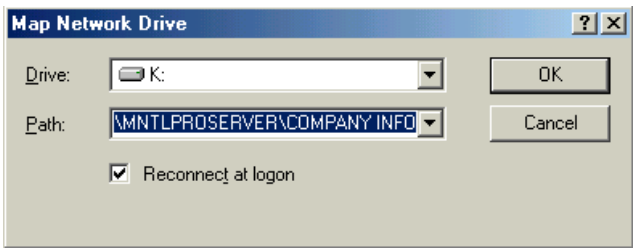
3. Click the down arrow in the Drive: drop box.
4. Select K



It is possible to use a drive letter other than K. However, K has become a default standard in many network environments for shared folders between multiple users.

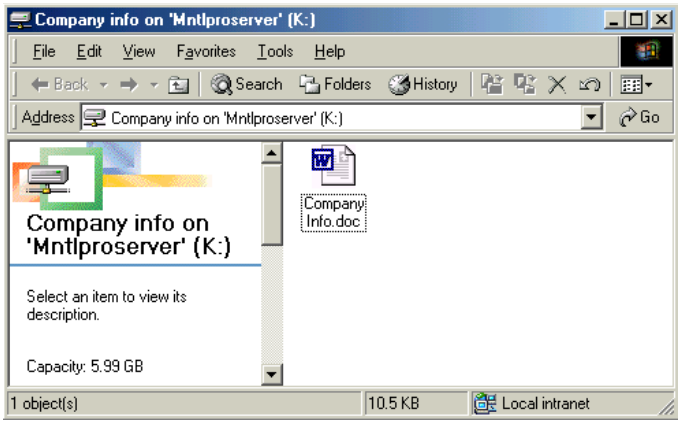
Map Network Drive window

5. Type: `\\MNTLPROSERVER\COMPANY INFO` in the *Path* field.
6. Place a check in the *Reconnect at logon* box
7. Click **Ok**



Company Info on Mntlproserver (k:)

The K drive window will open. This computer has now been mapped to the server each time the user logs into the network.



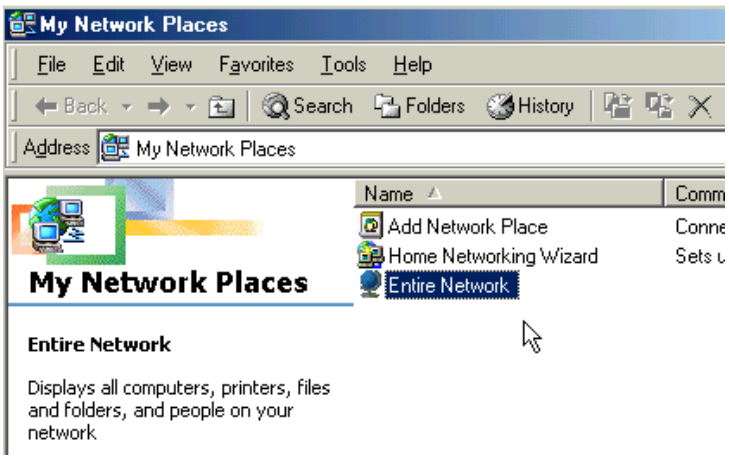
Method 2
Opening the folder from the Network Neighborhood

Desktop

8. Double Click My Network Places

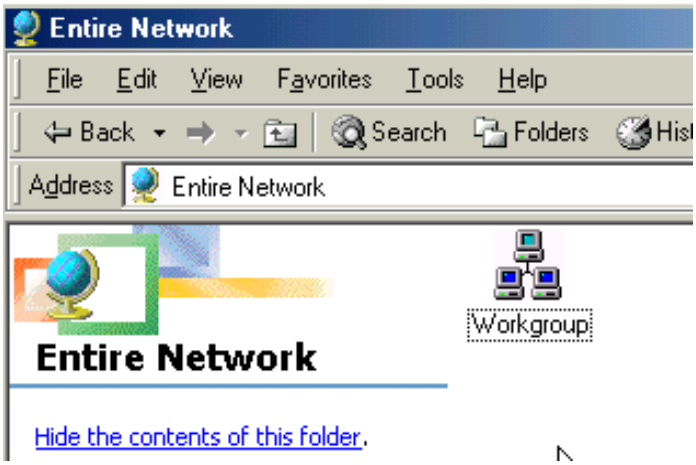
My Network Places window

9. Double Click Entire Network



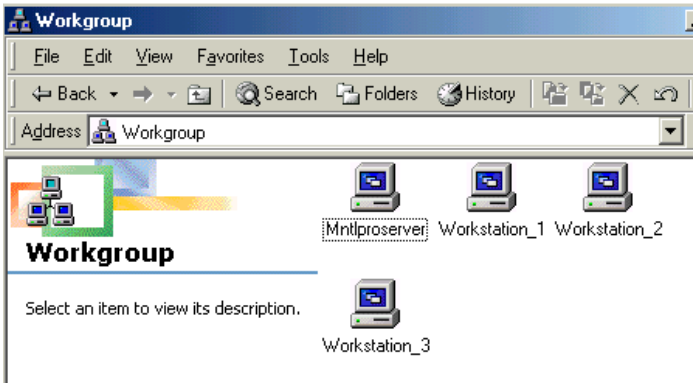
Entire Network window

10. Double Click Workgroup



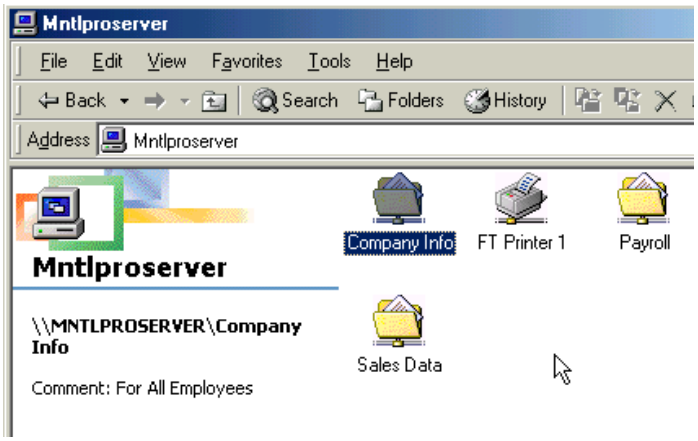
Workgroup window

11. Double click Mntlproserver



Mntlproserver window

12. Double Click Company Info



Company Info on Mntlproserver window

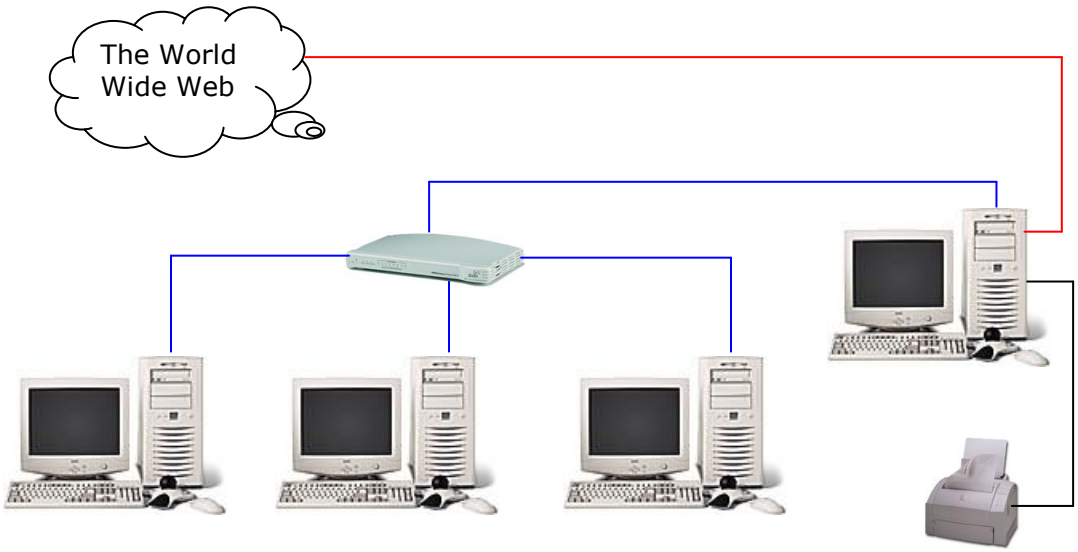
The folder is now open on the desktop.

Scenario Four:

Another six months have passed. The Faded Treasures network with its file server is running smoothly. Victoria, Russell and especially Jennifer were very happy with there workstations. That is until Victoria's nosy father stopped into the office one afternoon. He began telling Victoria about the next vacation destination he and her mother were taking. Finally he said, *"Words can't describe it. Open your web browser and I will show you the web site."* Victoria clicked on her web browser and her father covered his ears at the hiss and squelch of the telephone modem as it connected to the ISP. He then asked her how the staff connected to the Web. She told him each workstation had a separate phone line so they could all connect to the web at the same time. He cringed in disbelief. Then he told her how she could save money by removing the three phone lines dedicated to the web in exchange for a Digital Subscriber Line (DSL). Then Internet Connection Sharing could be turned on at the server. This would allow all the workstations to connect to the web at a much faster speed. Victoria smiled at her dad then said, "That sounds great dad, will you show Jennifer how to set that up?" At that moment, her dad realized that sometimes it is better to be quiet.

Assignment 4:

Your team will use Workstations 1 through 3 plus the configured file server to accomplish this last task. The sever, has been pre-configured with two NIC cards. The second NIC will be connected to the schools network simulating a DSL connection to the web. Internet Connection Sharing will be turned on at the server so the workstations will have access to the Internet. Use the following instruction to accomplish this assignment.



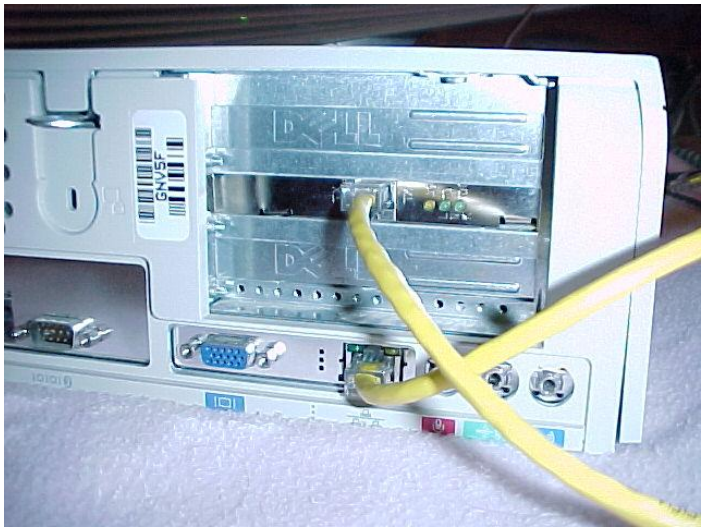
Steps 1 through 15 will be completed at the server.

Directions: Follow the instructions listed below.

Step One: Connecting the Second NIC and Enabling Internet Connection Sharing

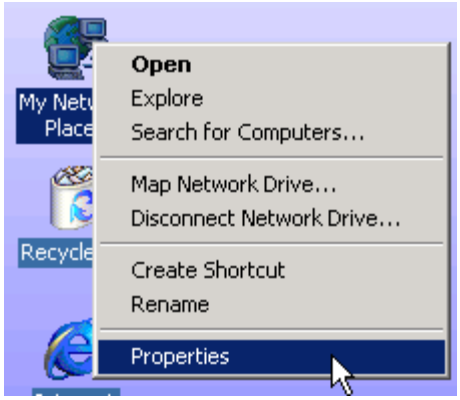
1. Plug network cable into second NIC card.
2. Connect the other end of this cable to your schools network.

NOTE: Ask your instructor for assistance with this step.



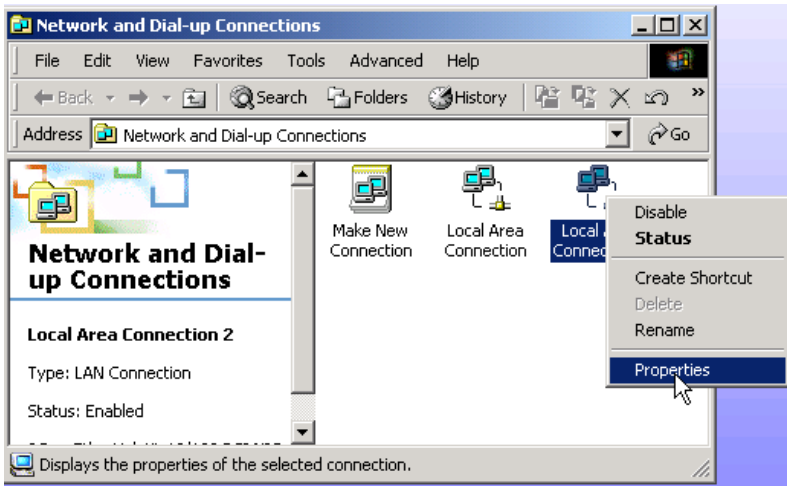
Desktop

3. Right Click on My Network Places
4. Select **Properties**



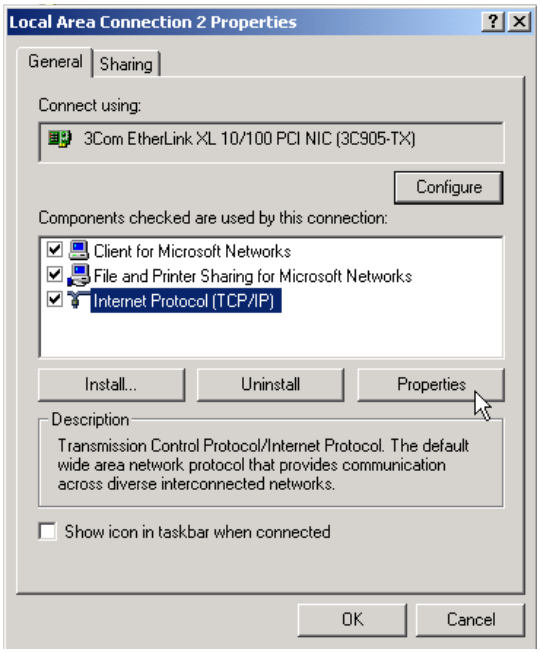
Network and Dial-up Connections window

5. Right Click on the Local Area Connection 2
6. Select **Properties**



Local Area Connection 2 Properties window

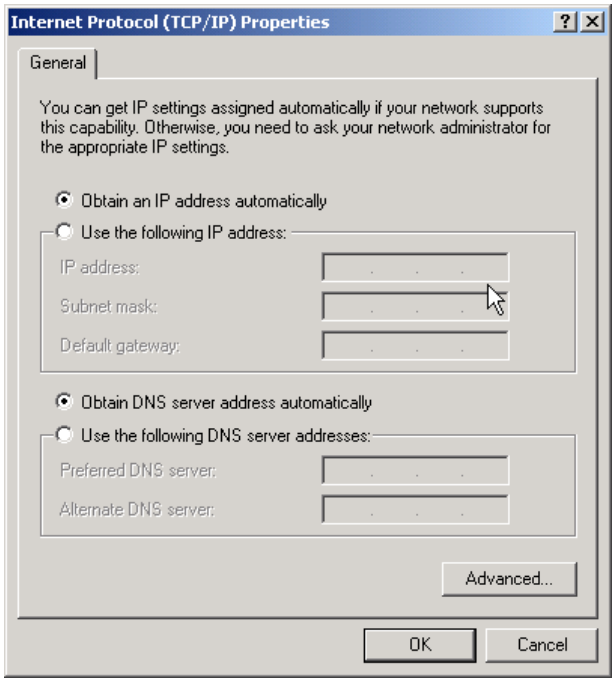
7. Select Internet Protocol (TCP/IP)
8. Click the **Properties** button



Internet Protocol (TCP/IP) Properties window

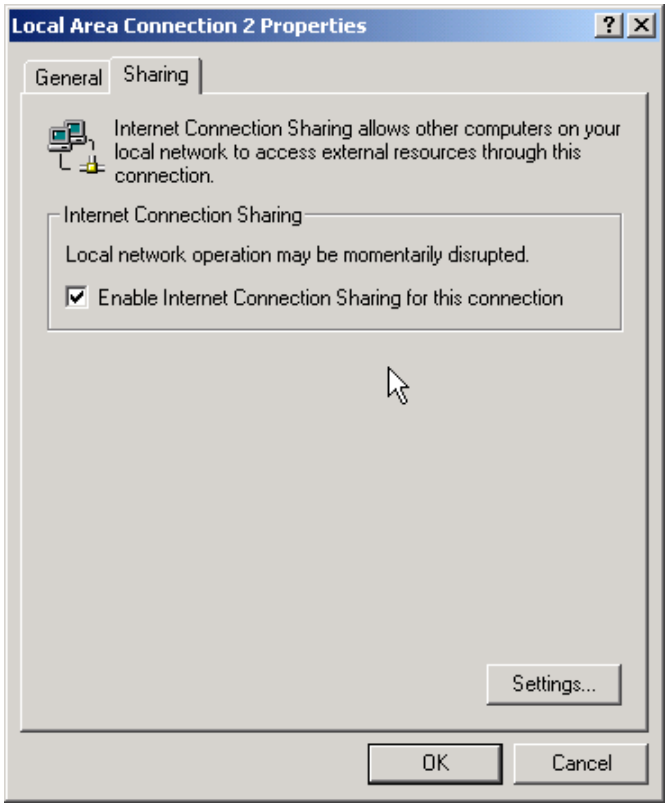
9. Ensure the radio button for *Obtain an IP address automatically* is chosen.
10. Click **OK**

Note: For a Office or Home Digital Subscriber Line (DSL) network, IP address, Subnet mask and Gateway information would be provided by the internet service provider.



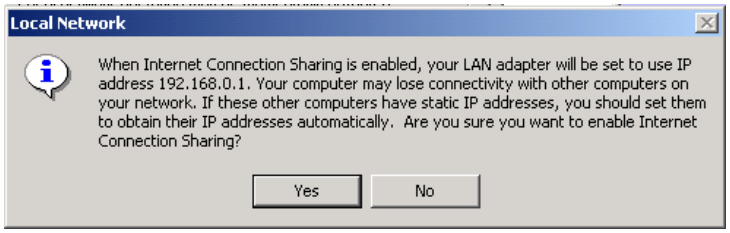
Local Area Connection 2 Properties window
Sharing tab

11. Click the Sharing tab
12. Click the check box next to *Enable Internet Connection Sharing for this connection*.
13. Click **Ok**



Local Network window

14. Click the **Yes** button
15. Close all windows

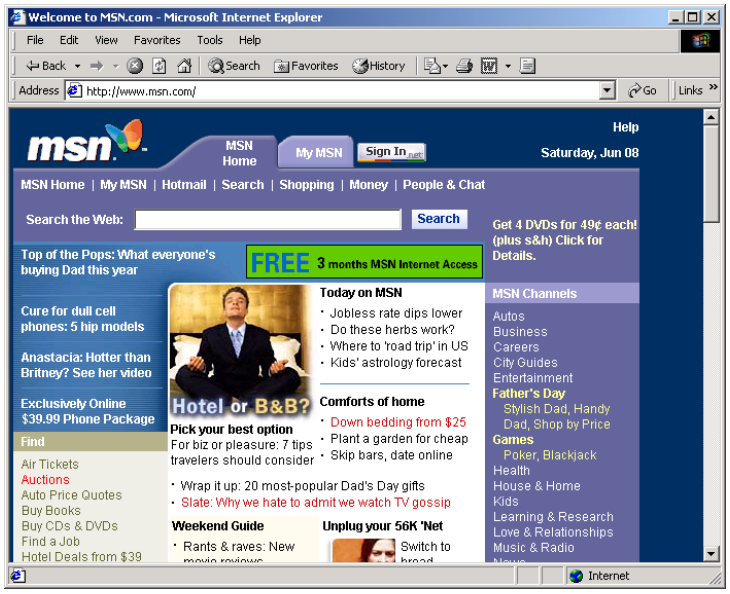


Internet Explorer window

16. Launch Internet Explorer

The MSN web page should appear.

Although Windows does not tell you to restart the server, it is recommended to restart the server at this time.



Step Two: Enabling DHCP

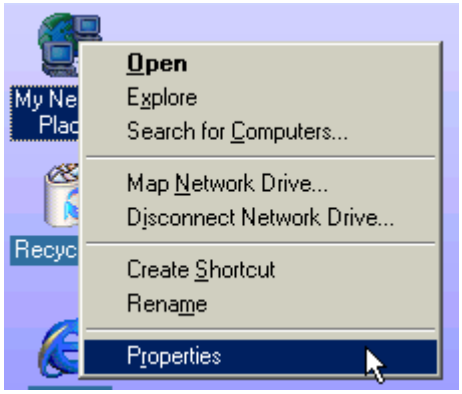
When Internet Sharing is turned on, the server is being utilized to provide IP address and DNS services (Domain Name Server) to the other machines on the network. While this information can be entered into each workstation manually, it is far easier to allow the server to manage the IP address given to each computer on the network.

What is DHCP? Dynamic Host Configuration Protocol (DHCP) is a network protocol that enables a DHCP server to automatically assign an IP address to an individual computer.

Directions: Follow the instructions listed below at each workstation.

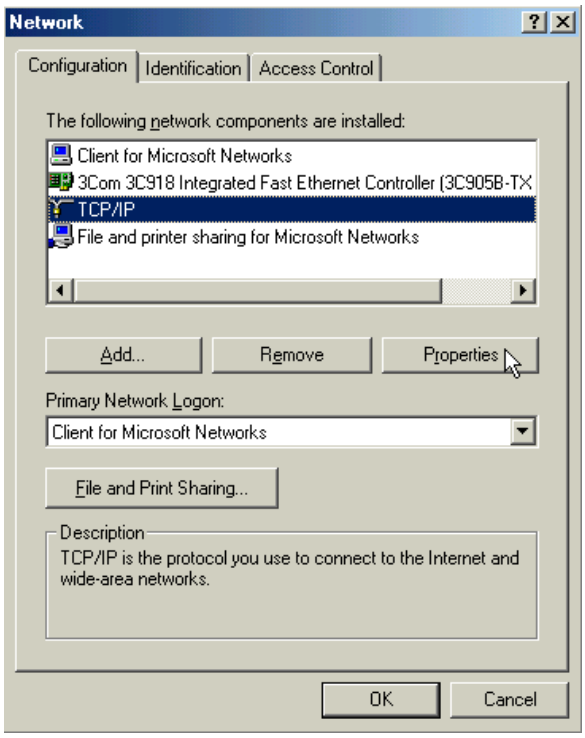
Desktop

1. Right Click My Network Places
2. Select **Properties**



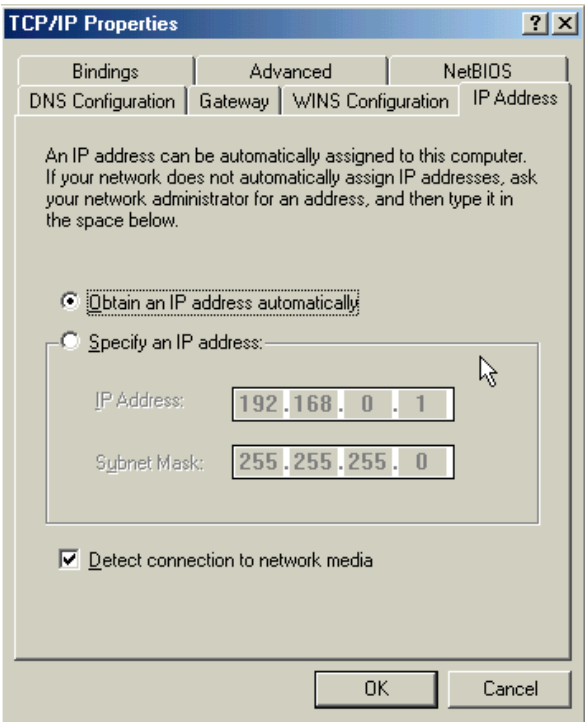
Network window

3. Select TCP/IP
4. Click the **Properties** button



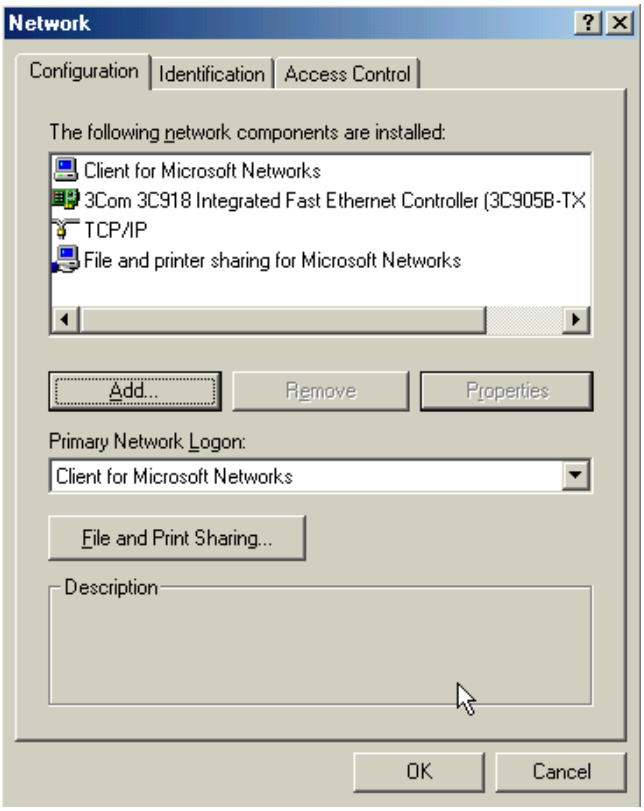
TCP/IP Properties window

5. Click the IP Address tab
6. Select the radio button next to *Obtain an IP address automatically*
7. Click **OK**



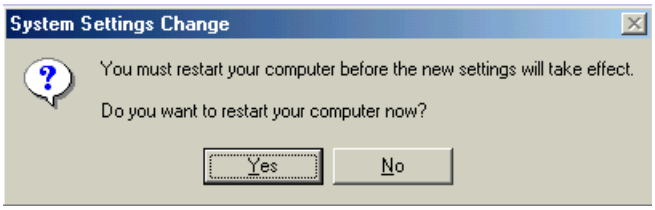
Network window

8. Click **Ok**



System Setting Change

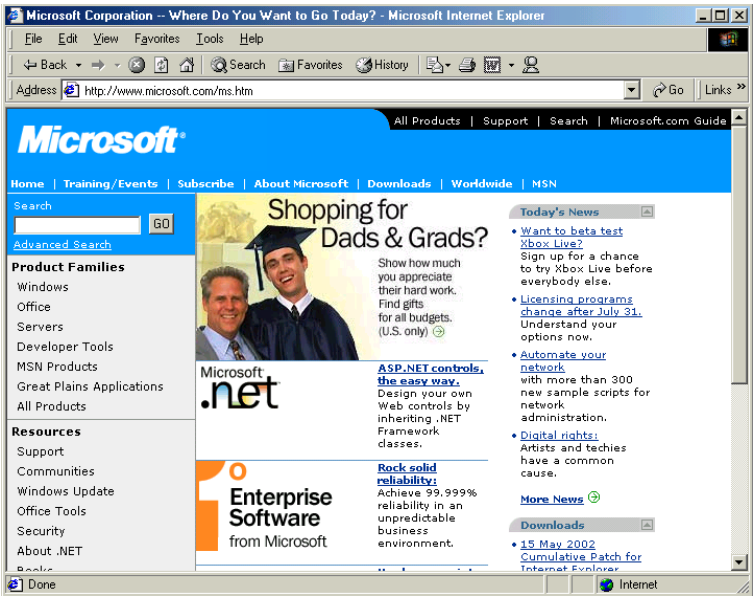
9. Click **Yes**
10. When the computer reboots, log back on.



Internet Explorer

11. Launch Internet Explorer
12. Type `www.microsoft.com` in the address bar.

The Microsoft web page should appear.



Directions: Follow the instructions listed below.

Step Three:

Windows 2000 Professional "Server"
User Name = MNTL_Admin
Company = PUSD MNTL
Computer Name = MNTLProServer
Password = MNTL

Windows 2000 Server "Server"
User Name = MNTL_Admin
Company = PUSD MNTL
Computer Name = MNTLW2KServer
Password = MNTL

net use z: \\0.0.0.0\d$
exit

Resources

Intel
Networking
What is a Network?
http://www.intel.com/support/inbusiness/24053.htm
Common Network Layouts
http://www.intel.com/support/inbusiness/24052.htm