4
NETWORK ARCHITECTURES

PROJECTS

Project 4.1	Understanding Key Concepts
Overview	You might describe a network in several ways. One is by the **network architecture**, which describes the network's logical design and can act as a blueprint for building your network. Because term definitions can sometimes vary based on the context in which they are used; being able to recognize terms and how they are used in the context of network architecture is important.
Outcomes	After completing this project, you will know how to: ▲ identify key terms and concepts related to network architecture
What you'll need	To complete this project, you will need: ▲ the following worksheet
Completion time	20 minutes
Precautions	None

This worksheet includes a list of networking terms on the left and descriptions on the right. Match each term with the description that it most closely matches. You will use all descriptions. Each description can be used only once.

___	Domain	A. Any server that provides resources to a network
___	Resource server	B. Large network containing multiple servers and typically integrating wide area links
___	Network topology	C. Network architecture with no centralized security and each computer can act as both a client and a server
___	Spooler file	D. Network segment that is isolated from the rest of a physical network by a firewall
___	Workgroup	E. Logical security boundary in a directory-based network
___	Screened subnet	F. Network architecture based on a combination of standard network architectures
___	Active Directory	G. File that acts as the print queue on a print server
___	Enterprise network	H. Physical network division within a larger physical network

___	Host-based network	I. Network architecture based on a centralized model for data storage and network management
___	Hybrid network	J. Microsoft's directory-based network architecture
___	Peer-to-peer network	K. Network security device that filters traffic into and out of a network or subnet
___	Client/server network	L. Network architecture based on a mainframe or other computer with connected terminals
___	Subnetwork	M. Physical network design describing how network devices connect
___	Firewall	N. Logical peer-to-peer network grouping

Project 4.2	Comparing Network Architectures
Overview	The three network architectural models currently used in network design are **peer-to-peer**, **client/server (or server-based)**, and **directory services (or directory based)**. Although peer-to-peer networks are still often found in smaller companies, many larger companies have shifted from the client/server model to the directory services model. Peer-to-peer networking is the model almost exclusively used when setting up home networks. You need to realize that the network's physical layout does not in itself determine the architectural model. Often, given a schematic drawing of the physical layout, any one of the three common models could apply. Other issues such as the number of network users, resource requirements, and security needs must be considered. You should be able to compare and contrast these networking models. Many features are common to two or more of the architectural models, while other features are unique to and help to define each of the models. A good understanding of these features and how they are related to the different models will help you choose the right model when designing or updating a network.
Outcomes	After completing this project, you will know how to: ▲ recognize network architectural model features ▲ compare and contrast common architectural models
What you'll need	To complete this project, you will need: ▲ the following worksheet
Completion time	30 minutes
Precautions	None

Read each of the networking scenarios and answer the questions that follow each scenario.

■ Part A: Networking Scenario #1

Your company has more than 2,000 employees and grows at an average rate of 50 employees per month. You have offices at five different locations spread across the United States. You plan to use secure connections established through high-speed Internet connections as your communications backbone between the offices. Network users will need easy access to shared resources, primarily shared files and printers. Security is not an overriding concern.

1. Which network architecture would be most appropriate in this situation? Give at least two reasons for your choice.

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2. What should you use as your guideline for placing resource servers?

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3. Justify using the Internet instead of connections leased from regional telephone companies to connect the office locations.

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4. Does the network in this scenario qualify as an enterprise network? Why or why not?

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5. How do security requirements impact your architecture selection?

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■ Part B: Networking Scenario #2

You have six users, all of whom are relatively computer literate, working from a single location. The users need to work together on projects that include multiple elements, including text documents, digital photos, and multimedia elements. Individual elements should remain local to the user who originally created the content until you are ready to produce the finished project. At that time, all of the elements are copied to one computer for final rendering. The network will not connect to the Internet, and you are not worried about internal security. Users must be able to freely share and access data.

1. Which one network architecture is the best match in this situation and why? Why wouldn't you want to use one of the other architecture models in this scenario?

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2. What are some of the potential hidden costs in your decision?

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3. All of the computers are running Windows 7 Professional or Windows 7 Enterprise or Windows Server 2008. What, if any, additional software would be required in this scenario?

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4. Is computer literacy an issue in this scenario? Why or why not?

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■ Part C: Networking Scenario #3

You need to support 60 users in two locations with a full-time connection between the locations. Because of the available bandwidth, you want to keep the traffic between the locations to a minimum. You plan to deploy a file server and print server in each location. You also need to deploy a database server, but because of the software costs involved, you will have only one database server.

1. Which network architectures could support the configuration requirements?

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2. What can you do to minimize traffic requirements during user login?

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3. How can you determine the best location for the database server?

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4. How can you justify putting file and print servers in both locations?

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5. If you configure this network as an Active Directory domain, how would this impact traffic across the link?

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■ Part D: Networking Scenario #4

You need to support 20 users in three locations. Five employees are in the Chicago office, six in the St. Louis office, and nine in the Dallas office. Chicago and St. Louis connect to Dallas through dial-up router connections that provide connectivity on an as-needed basis. Each office also connects to the Internet through a high-speed, full-time connection. Security is a primary concern and access to shared resources must be strictly controlled.

1. Which network architectures could support the configuration requirements? Why would you use these architectures and not the other available architecture(s)?

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2. How can you improve connectivity between the locations using the resources that are currently available?

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3. A user in Chicago needs to access data on a file server located in St. Louis. Trace the path from Chicago to St. Louis that the data must take, based on the current connection. What types of problems might you encounter?

_____

_____

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_____

Project 4.3	Exploring a Peer-to-Peer Network
Overview	The defining feature of a peer-to-peer network is that it has no centralized resource or security management. A peer-to-peer network is designed to let users share resources from their computers and manage access security, if any, themselves. The procedures for sharing resources are somewhat operating system and version specific. The basic procedures are similar for different Windows versions, but you will see variations. For example, Windows 95 and Windows 98 support share-level security where you define the access level and a password for resource access when you share a resource to the network. Later Windows versions don't share this security method. During this project you will explore different procedures for sharing resources from a computer running Windows 7 Professional or Windows 7 Enterprise. As a test of your success, you will attempt to access the resources from another computer.
Outcomes	After completing this project, you will know how to: ▲ enable or disable Simple File Sharing ▲ share resources to the network from Windows 7 Professional or Windows 7 Enterprise ▲ access shared resources
What you'll need	To complete this project, you will need: ▲ the following worksheet ▲ peer-to-peer network with Windows 7 Professional or Windows 7 Enterprise and Windows Server 2008 peer servers
Completion time	45 minutes
Precautions	If your computer is part of a network other than a dedicated or private training network, you should check with your network administrator before attempting this project and have your network administrator review the project steps. Your network administrator may find it necessary to modify the project steps. You should be logged on as Administrator on your Windows 7 Professional or Windows 7 Enterprise and Windows Server 2008 computers.

■ Part A: Explore File Sharing with Simple File Sharing Enabled

Complete all project steps in this part on the computer running Windows 7 Professional or Windows 7 Enterprise.

1. Open the **Start** menu and select **Computer**.
2. Click on the **Organize** tab and then click **Folder and Search Options** as shown in Figure 4-1.

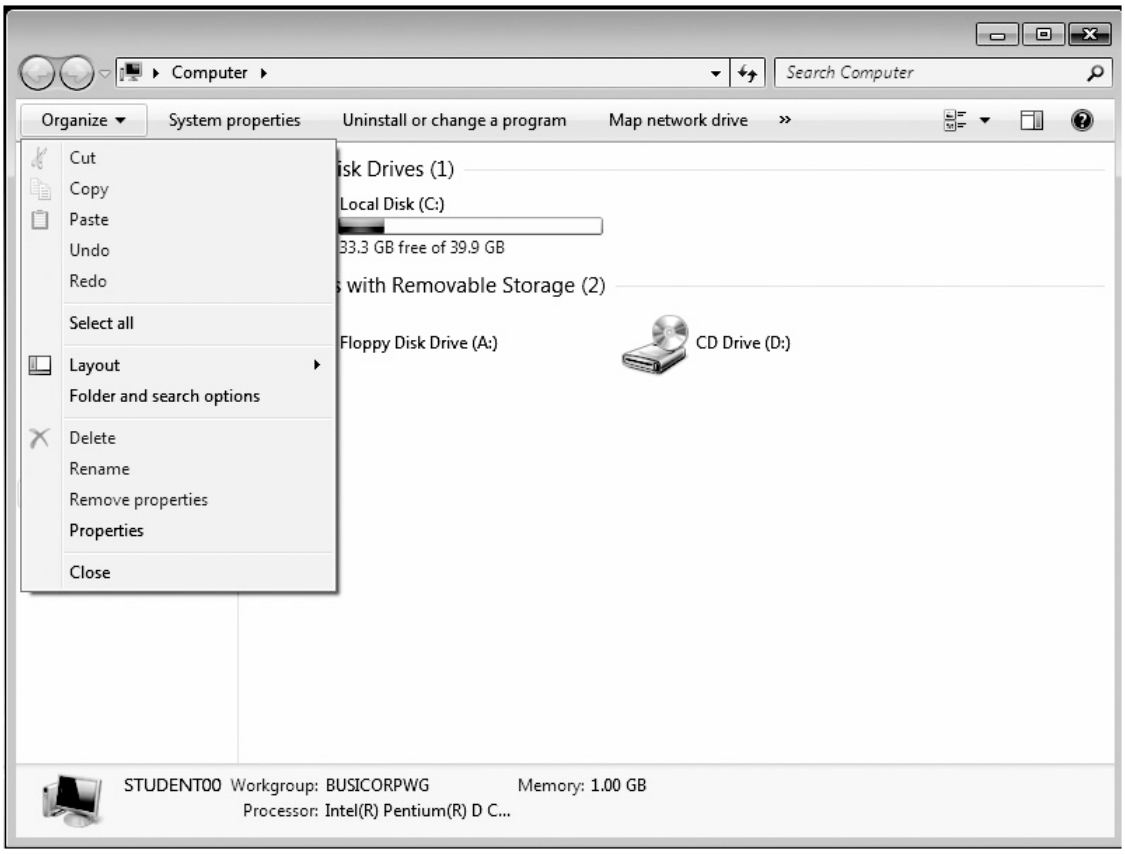

Figure 4-1: Folder and Search options

3. Select the **View** tab and scroll to the bottom of the **View Properties** dialog box. **Use Sharing Wizard** (Recommended) should be checked as shown in Figure 4-2.

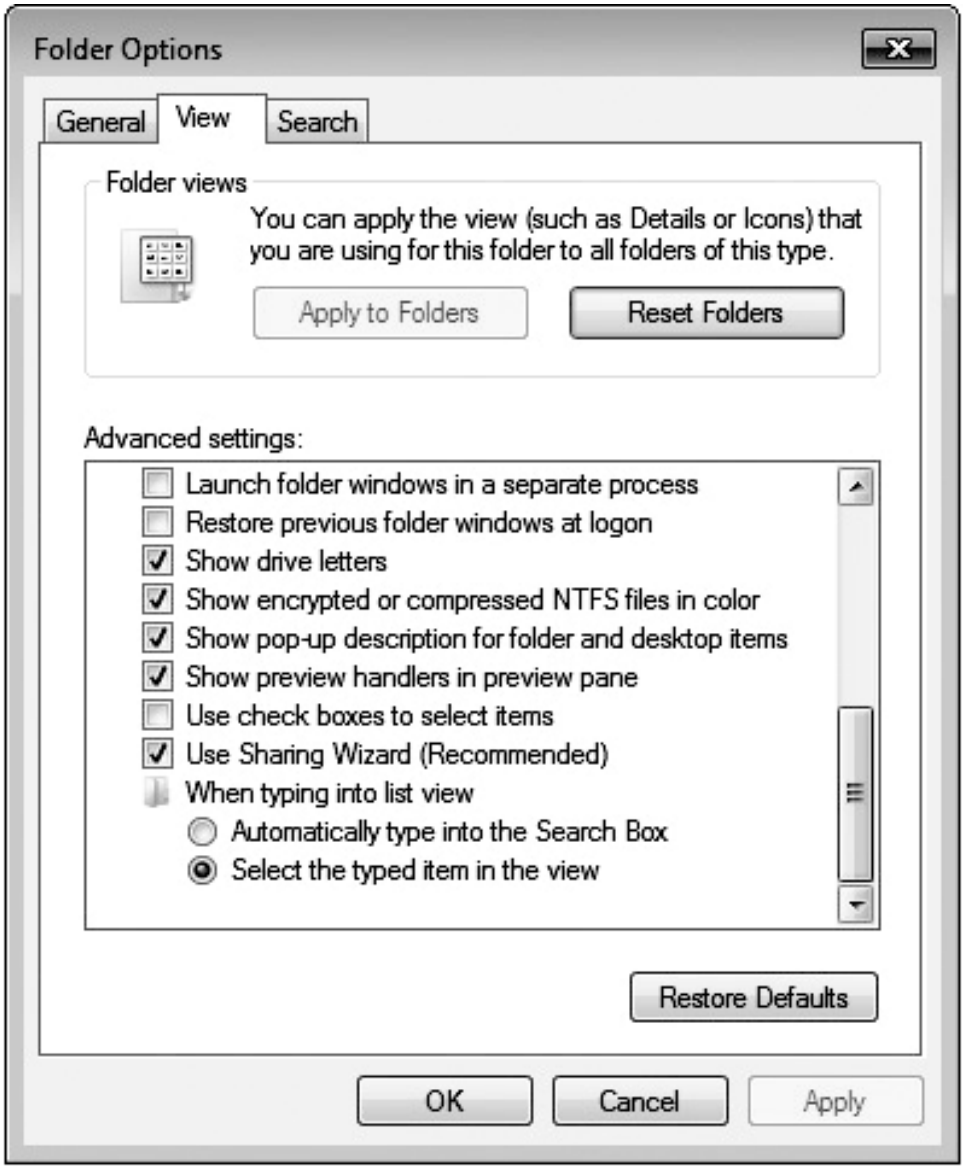

Figure 4-2: Use Sharing Wizard

4. Click *OK*.
5. Open the **C:** drive and select **New Folder** to create a new folder. Name the folder **Simple1.**
6. Create a second folder at the root of the **C:** drive named **Simple2**.
7. Open **Simple1**, and right-click on the empty space in the right window. Select **New**, then **Text Document**. Name the document **limited text** as shown in Figure 4-3.

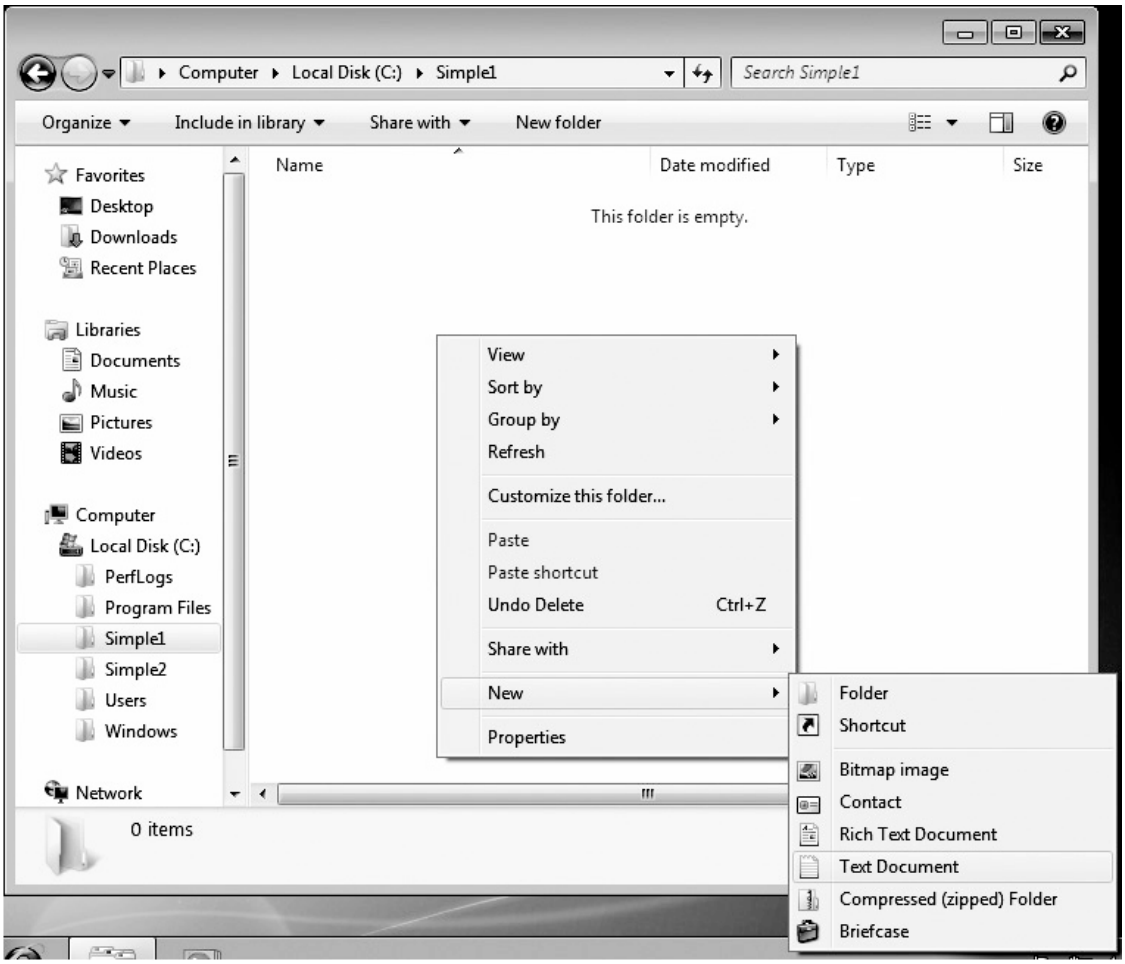

Figure 4-3: Name Simple1

8. Open **limited text** and add some text, and then save the changes and close the document.
9. Open **Simple2** and create a text document named **full text** that contains some sample text.
10. Right-click **Simple1** and select **Share With/Specific People**, similar to the image in Figure 4-4.

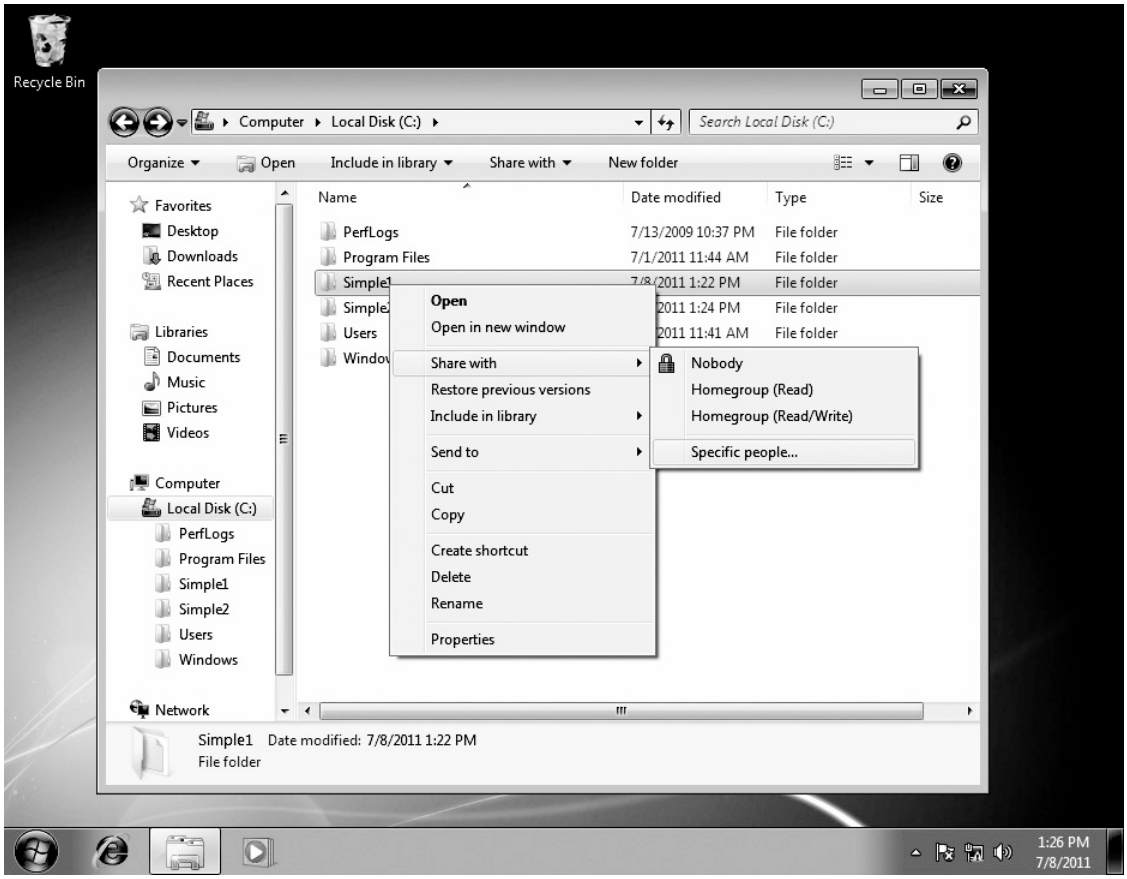

Figure 4-4: Simple1 Share With

11. To enable file sharing, you need to select the **Everyone Group** from the drop down menu and give them **Read** permissions.
12. Click the *Share* button and then choose **Yes**, **Turn on network discovery and file sharing**.
13. Right-click **Simple2** and follow the same procedure in Steps 10, 11, and 12, but this time grant everyone **Read/Write** permissions.

    What differences in access security should you expect for Simple1 and Simple2?

    _____

    _____

    _____

14. In **Computer**, select **Network/Student00** to see your shared files, as in Figure 4-5. Do not exit **Computer**.

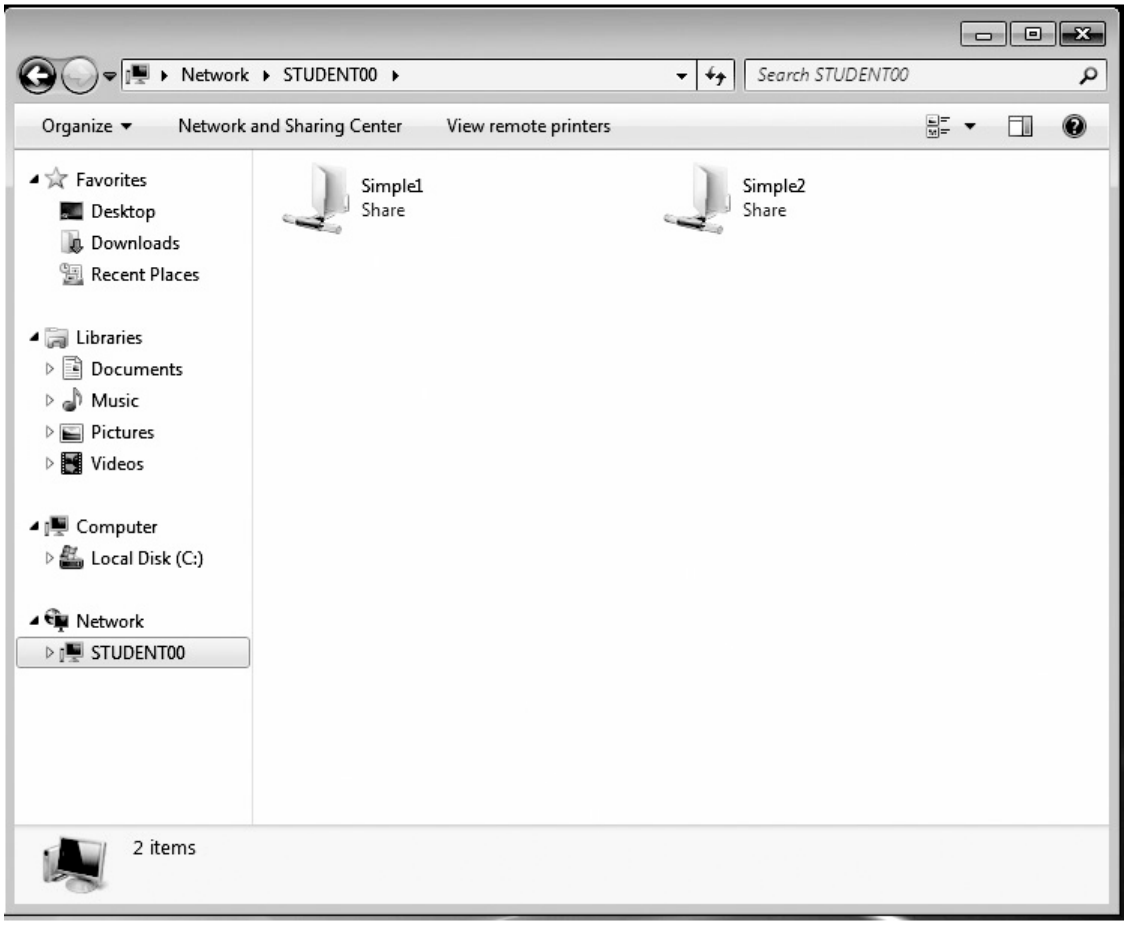

Figure 4-5: Network Shares

■ Part B: Explore File Access with Simple File Sharing Enabled

Complete all project steps in this part on the computer running Windows Server 2008.

1. Select **Start** and then **Network**.
2. The Network window will open, and you will receive a warning that Network Discovery and File Sharing is turned off. Click on that warning and *turn on* as shown in Figure 4-6.

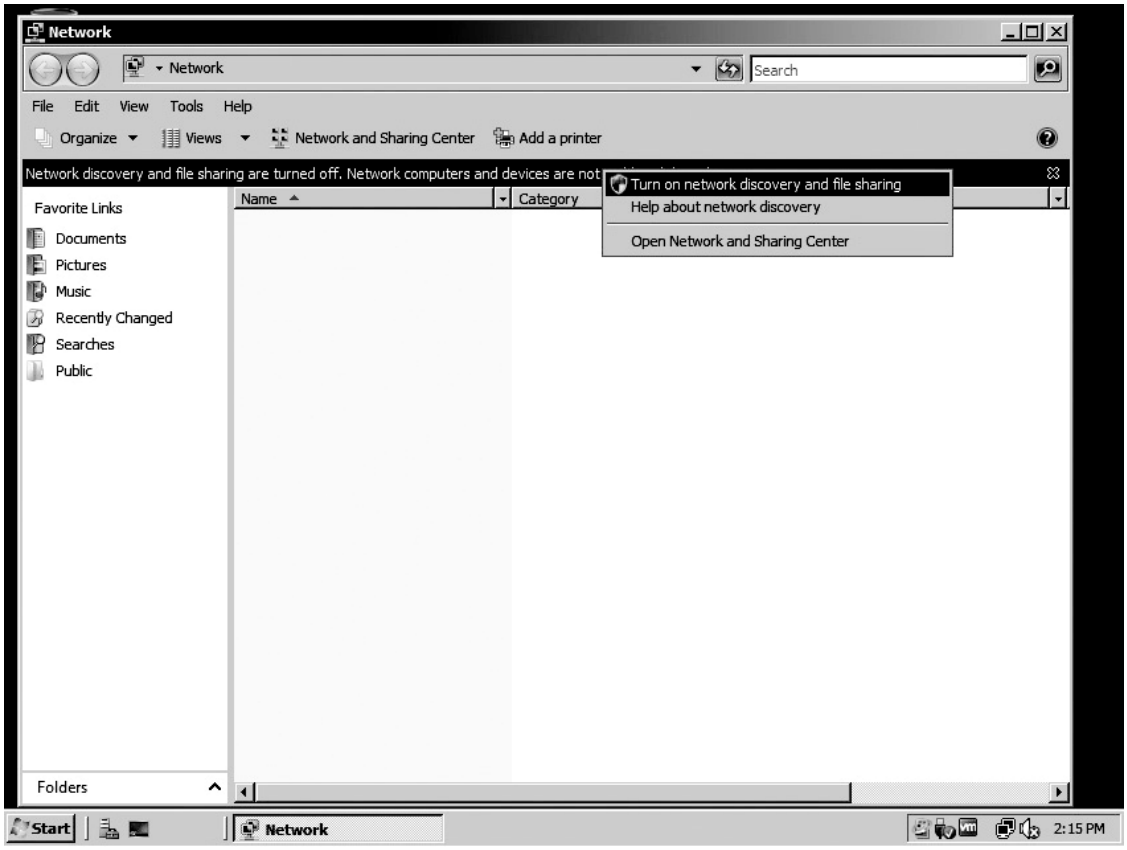

Figure 4-6: Turning on Network Discovery and File Sharing

You will receive the same warning as in Step 12 from Part A. Choose *Yes*.

3. Click on the **Student00** object in the right-hand window and answer the user name and password to access the shared files on that computer. Because of default built-in security, you will not be able to access the files.
4. To override this built-in security, you will need to open Windows Explorer (the folder icon at the bottom left of the desktop screen) and choose Network and Sharing Center, as in Figure 4-7.

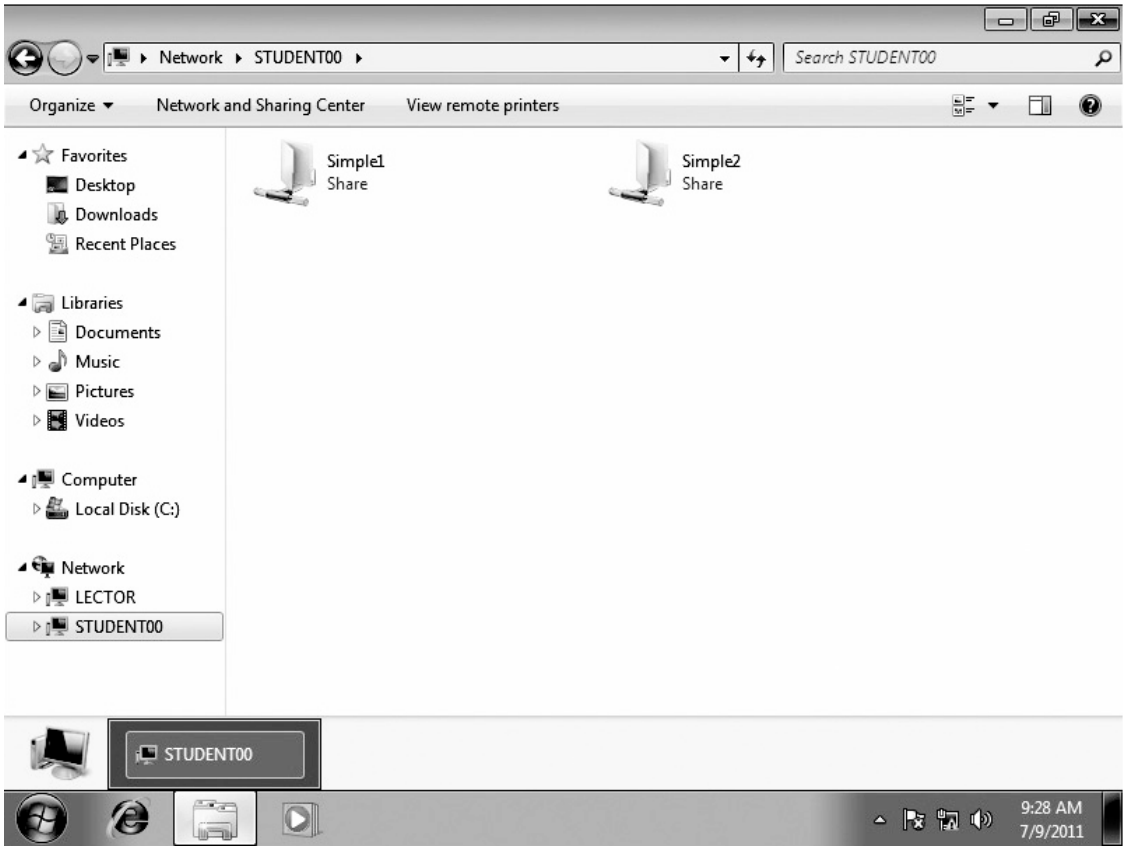

Figure 4-7: Accessing Network and Sharing Center

5. In the Network and Sharing Center, choose **Change Advanced Sharing Setting**, scroll down to the bottom, and make sure the **Public** folder sharing is turned on and the **Password Protected Sharing** is turned off, as in Figure 4-8.

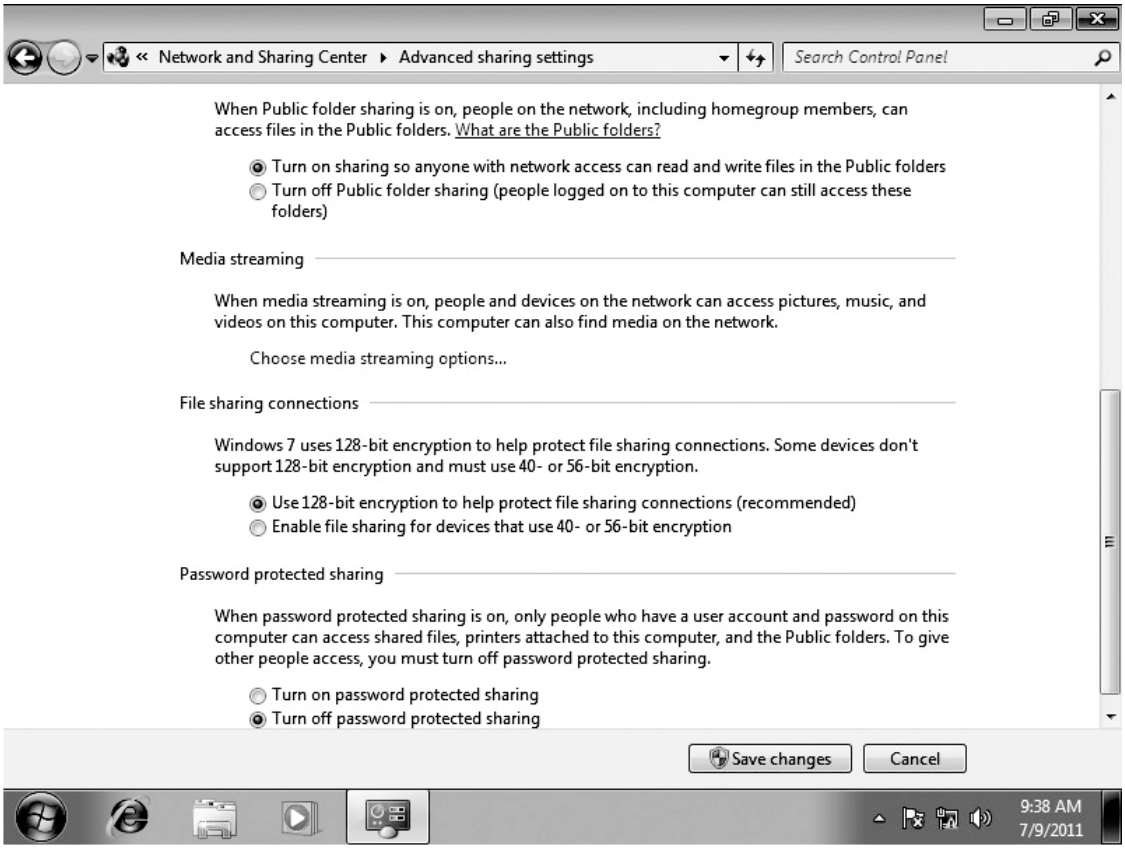

Figure 4-8: Changing share settings-Windows 7

6. Now go back to your Windows Server 2008 and change the **Network Discovery and File Sharing** settings on it, also as shown in Figure 4-9.

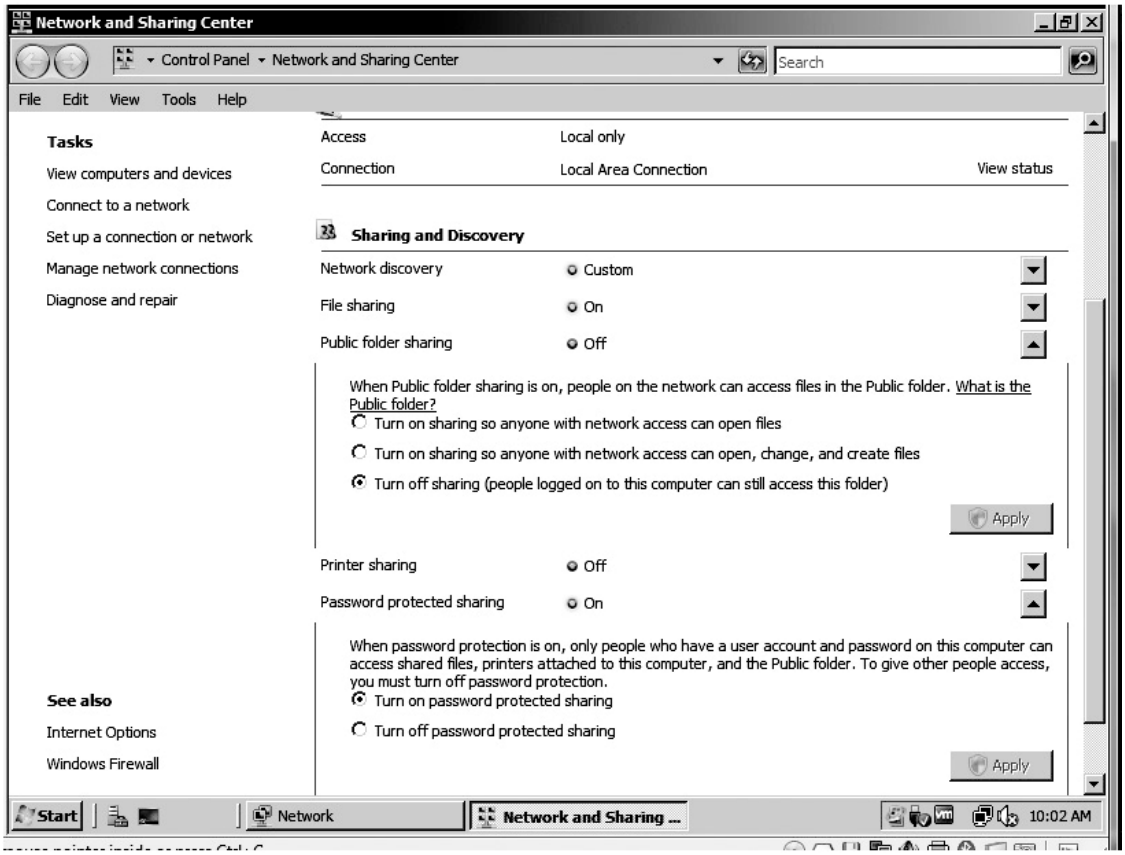

Figure 4-9: Changing share settings-Server 2008

7. You should see **Simple1** and **Simple2** available.
8. Select **Simple1** in the left-hand pane and then double-click **limited text.txt** in the details pane to open the text file.
9. Type some additional text and select *File* and then *Save.* What happens and why?

_____

_____

10. Click *OK.* When the **Save As** dialog box appears, click *Cancel.*
11. Select *File* and then *Exit* and click *No* when prompted to save changes.
12. Right-click the details pane for **Simple1** and select **New** and then **Text Document**. What happens?

_____

_____

13. Click *OK.*

14. Select **Simple2** and then double-click **full text.txt** to open the text file.

15. Type some additional text and select *File* and then *Save.* What happens and why?

    _____

    _____

16. Right-click the details pane for Simple2 and select **New** and then **Text Document**. What happens?

    _____

    _____

17. Do not exit **My Computer**.

Project 4.4	Promoting a Windows Server 2008 Computer to Domain Controller
Overview	You create an Active Directory domain by promoting the first domain server in that domain. Doing so creates the domain directory structure. You promote a Windows Server 2008 computer to domain controller by configuring it for the domain controller role through the Manage Your Server utility. After promoted, and unless demoted back to being a server and not a domain controller, the server can only be used as part of the domain. You can no longer log on to the server as a stand-alone server. When you log on to the server, you log on to the Active Directory domain. The domain management utilities are installed on the server during promotion. Also, any local users and groups are deleted. When promoting the first domain controller, the wizard checks for a Domain Name System (DNS) server that is authoritative for the domain. The DNS server maps host names to IP addresses in a TCP/IP network. An authoritative DNS server, one with the "official" mappings for the domain, is a requirement for an Active Directory domain. Because the network does not already have a DNS server, it will install DNS server support on the domain controller as part of the promotion process. During this project, you will promote your Windows Server 2008 computer to the domain controller role and create the Busicorp.com Active Directory domain.
Outcomes	After completing this project, you will know how to: ▲ promote Windows Server 2008 to the domain controller role ▲ create an Active Directory domain ▲ create domain users
What you'll need	To complete this project, you will need: ▲ a computer running Windows Server 2008 ▲ Windows Server 2008 installation software

Completion time	60 minutes (depending on computer configuration)
Precautions	If you are running this project as part of a larger classroom network, your instructor will provide alternate steps. Domain names must be unique, so your instructor will need to provide you with an alternate domain name. If you are performing this project on an existing network, you must review the project steps with your network administrator. Your network administrator may need to make changes or additions to the instructions and might specify a different domain name.

Depending on the network configuration in which you are working, your instructor or network administrator may specify a different domain name. Record that domain name here:

Alternate domain name: _____

If an alternate domain name is not provided, use the domain name specified in the project (Busicorp.com).

■ Part A: Promote a Server to Domain Controller

Before a Windows Server 2008 computer can be used as a domain controller, it must be promoted to that role.

1. If the **Manage Your Server** dialog box is not open on your computer, open the **Start** menu, select **Administrative Tools**, and then select **Manage Your Server**.
2. Scroll down, click *Add,* as indicated in Figure 4-10.

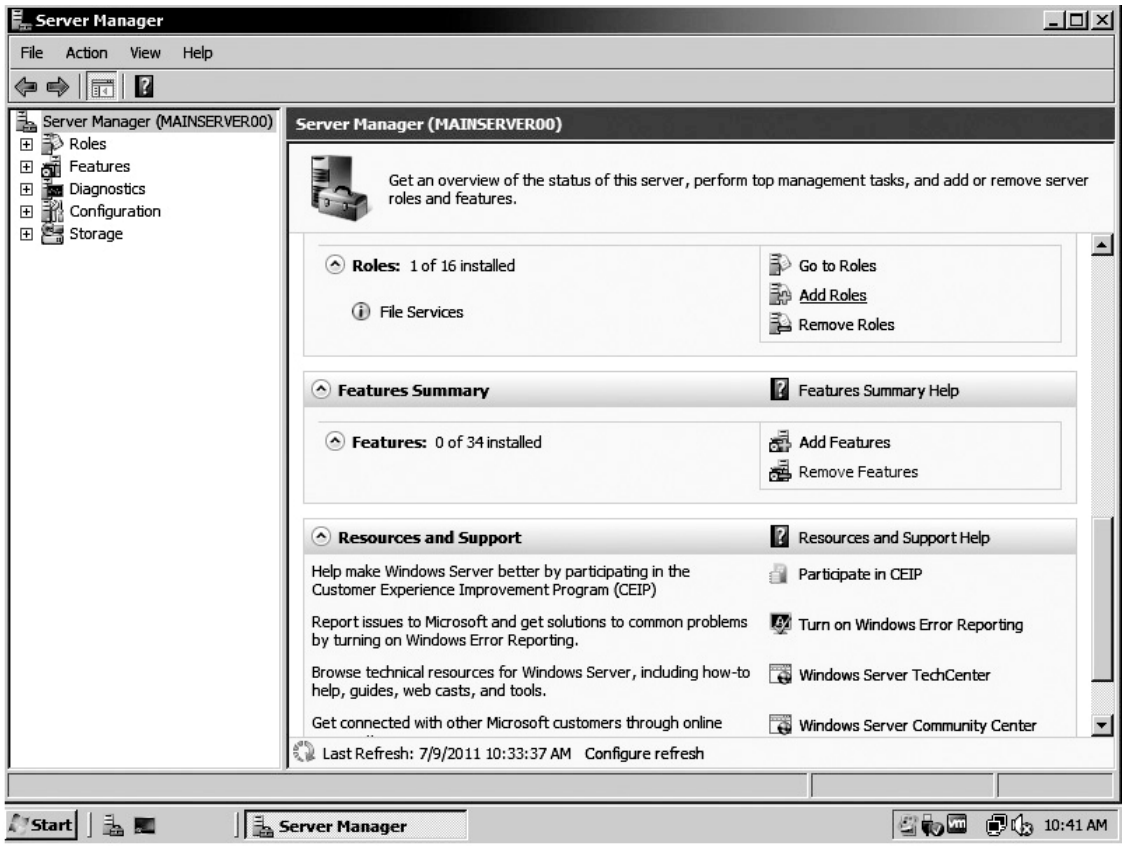

Figure 4-10: Add or remove a role

3. Review the preliminary steps and then click *Next.*
4. Choose **Active Directory Domain Services** and click *Next* (refer to Figure 4-11.)

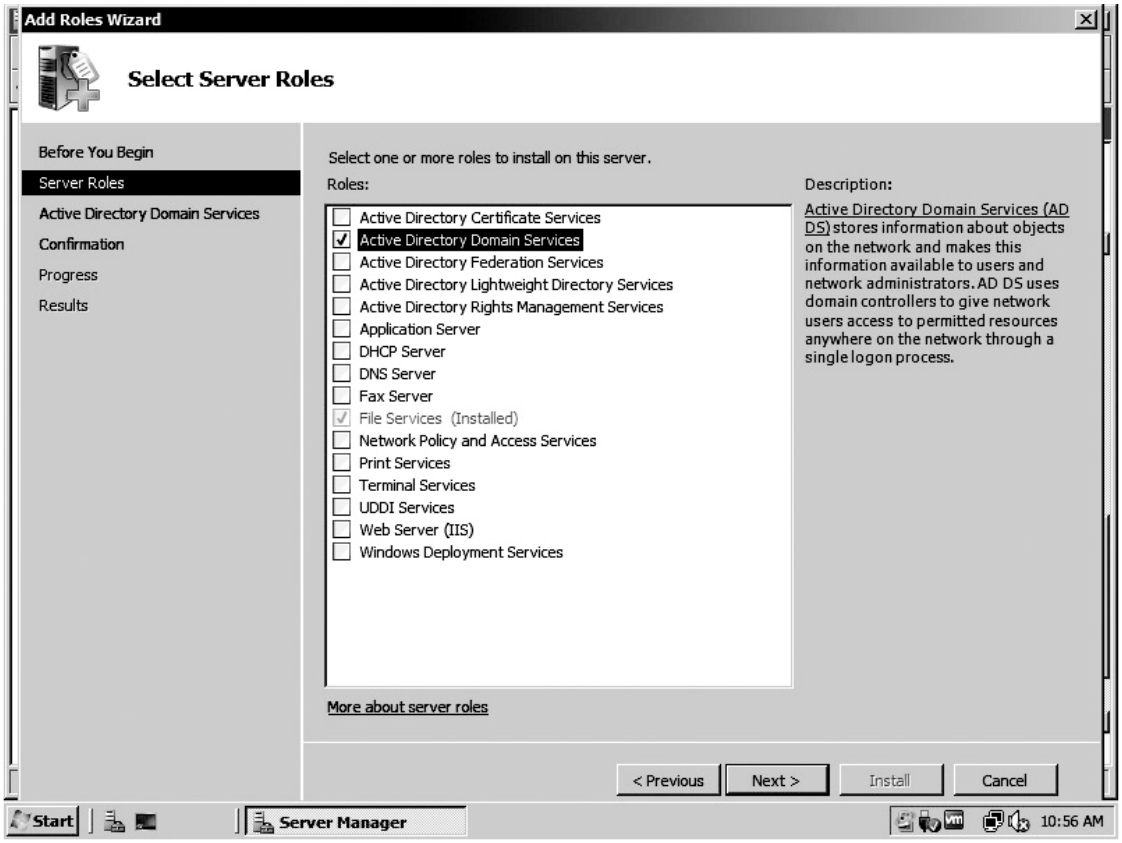

Figure 4-11: Server options

5. Review the summary of selections and click *Install.*
6. Ignore the **Warning that Automatic Updates** is not active and **The Active Directory Installation Wizard** launches automatically. When the **Welcome** screen appears, click *Next.*
7. Click *Next.* Then choose **Create a New Domain in a New Forest**, and click *Next.*
8. The **Name The Forest Root Domain** appears. Type in **BUSICORP.COM** and click *Next,* as in Figure 4-12.

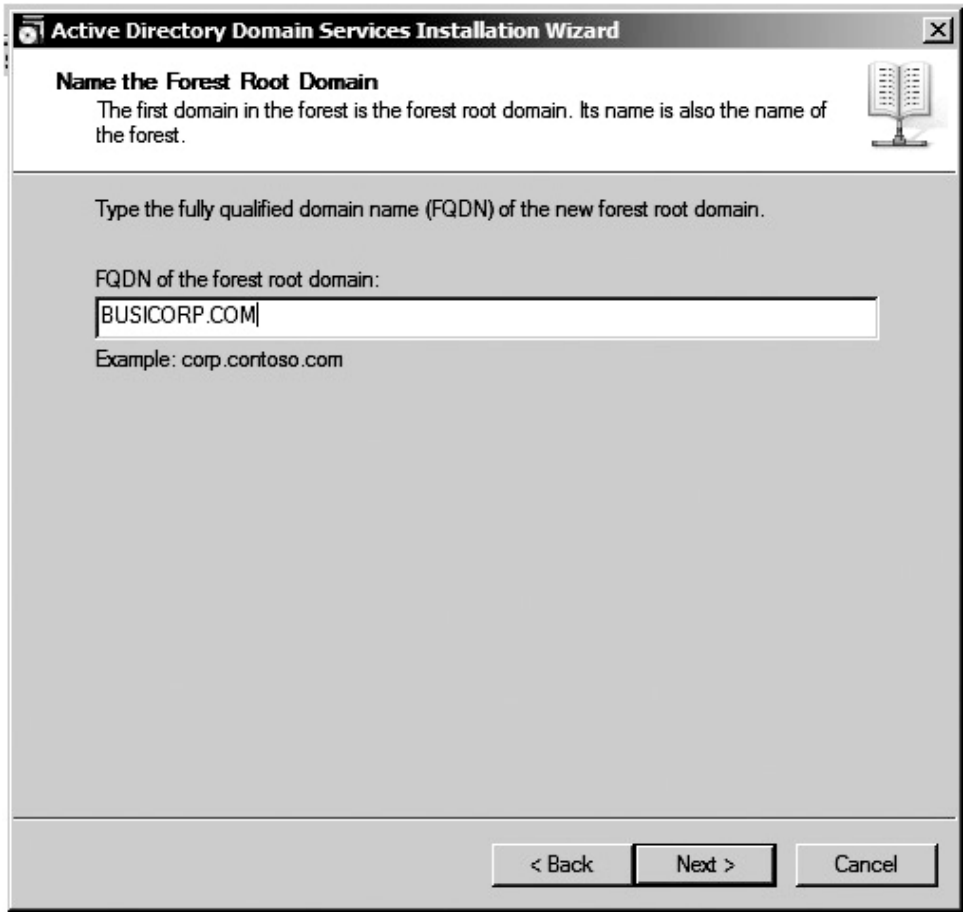

Figure 4-12: Domain Name

9. Accept the default for **DNS Server** and click *Next*, as in Figure 4-13.

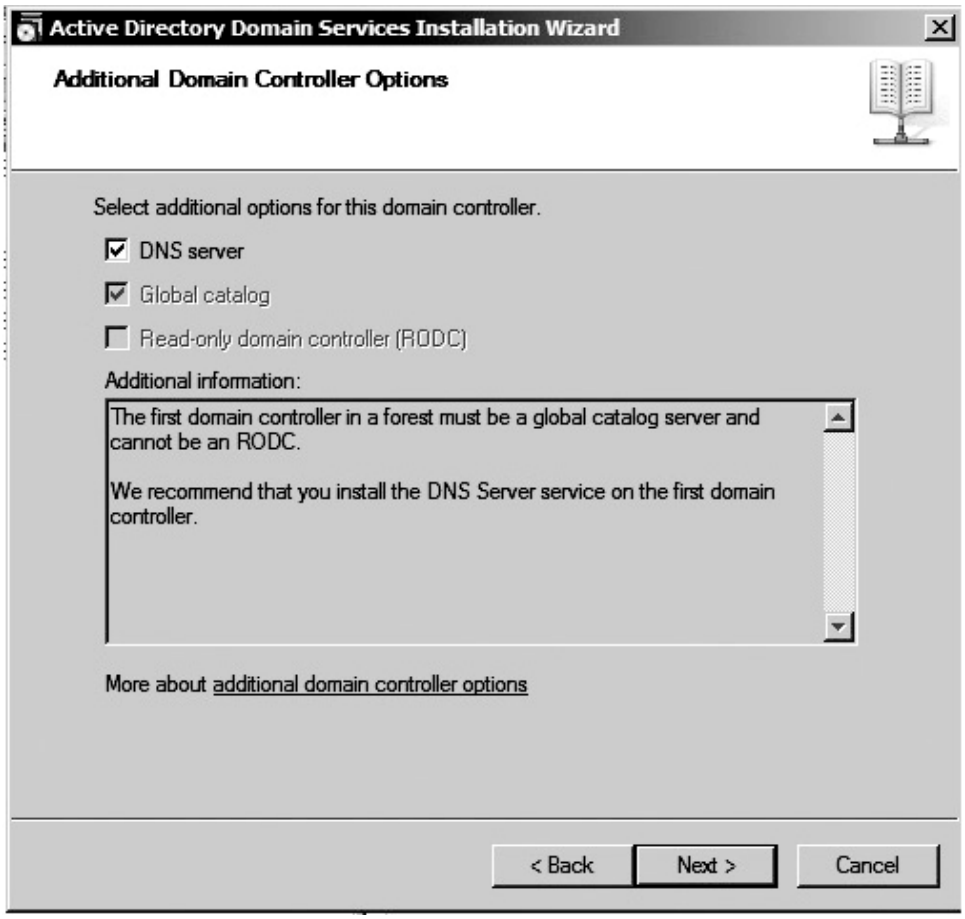

Figure 4-13: DNS Server

You may get a warning about having a **Dynamically assigned IP address.** This refers to the IPv6 address. Choose **Yes** and **Yes** and continue.

10. Accept the **Default** and click *Next*, as in Figure 4-14.

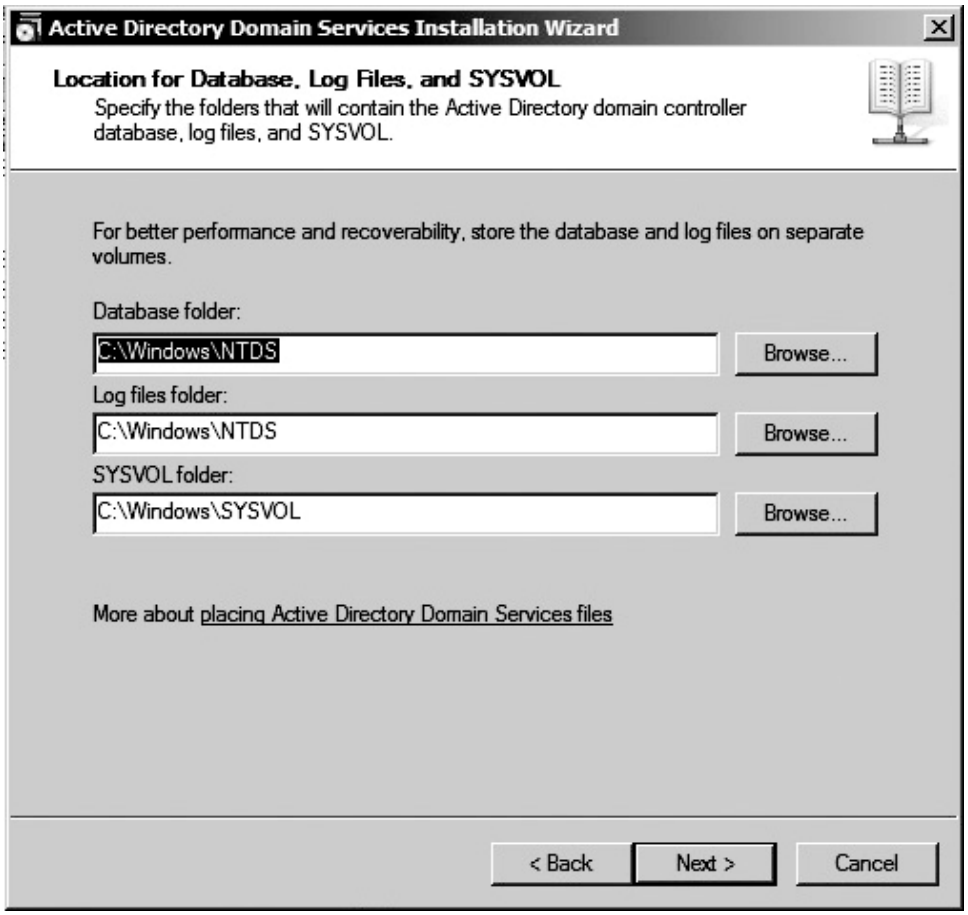

Figure 4-14: Database, Log Files, and SYSVOL

11. The **Directory Services Restore Mode Administrator Password** screen appears. Type **P@SSw0rd** in the **Restore Mode Password and Confirm Password fields**, and click *Next.*
12. The **Summary** screen opens. Review the selection summary and then click *Next* to start Active Directory installation. The wizard will create the Active Directory domain and configure the computer as the first domain controller. This process will take up to 20 minutes, depending on computer speed.
13. When the **Active Directory Installation Wizard** reports the installation is complete, click *Finish.*
14. When prompted, click *Restart Now* to restart the computer.
15. After restart, log on as **Administrator**. The **Configure Your Server Wizard** informs you that the computer is now a domain controller. Click *View the Next Steps* for this role and review the steps.
16. Close the **Help** box containing the configuration steps and then click **Finish** to close the **Configure Your Server Wizard**.

■ Part B: Create Domain Users and Groups

Typically, one of the first steps after creating a new domain is creating domain users. You will create two domain users.

1. Open the **Start** menu, point to **All Programs**, select **Administrative Tools**, and then select **Active Directory Users and Computers**. This primary utility manages your domain's logical structure and domain objects, including users.
2. Expand and then select your domain. What containers are listed?

_____

_____

3. Select **Computers** and verify that the container is empty.
4. Select **Domain Controllers** and verify that your Windows Server 2008 computer is listed as the only domain controller.
5. Click **Users**. Notice that the contents includes both users and groups.
6. Right-click your domain in the tree view pane (the left-hand pane), and select **New** and then **Organizational Unit**. Doing so creates a new Organizational Unit (OU) that can be used as a container for domain objects (refer to Figure 4-15).

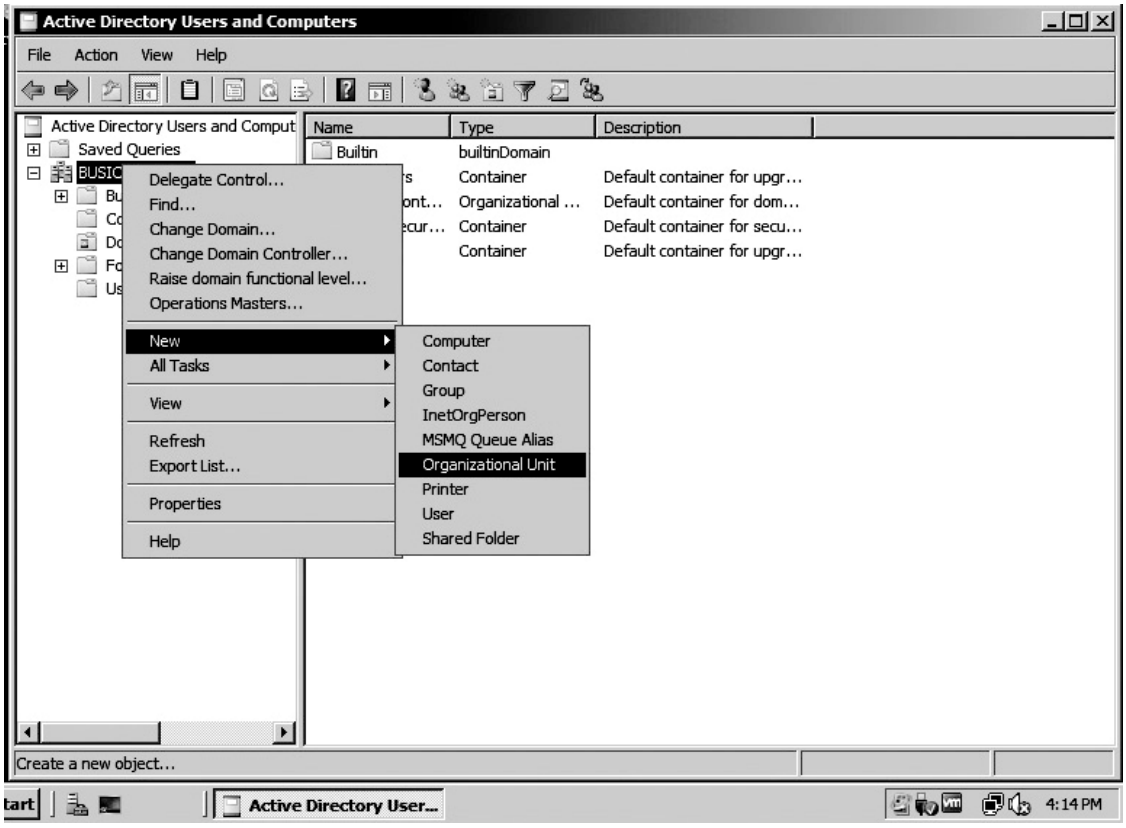

Figure 4-15: Creating a new Organizational Unit

7. Name the new **OU Project Stuff** and click *OK*.
8. Right-click **Project Stuff**, and select **New** and then **User**. You can create users in the Users container or in OUs that you have created.
9. Fill in the prompts as follows and then click *Next*:

   First name: **Standard**
   Initials: **(leave blank)**
   Last name: **User**
   Full name: **(leave at default)**
   User logon name: **Standard**
   User logon name (pre-Windows 2000): **Standard**
   Refer to Figure 4-16.

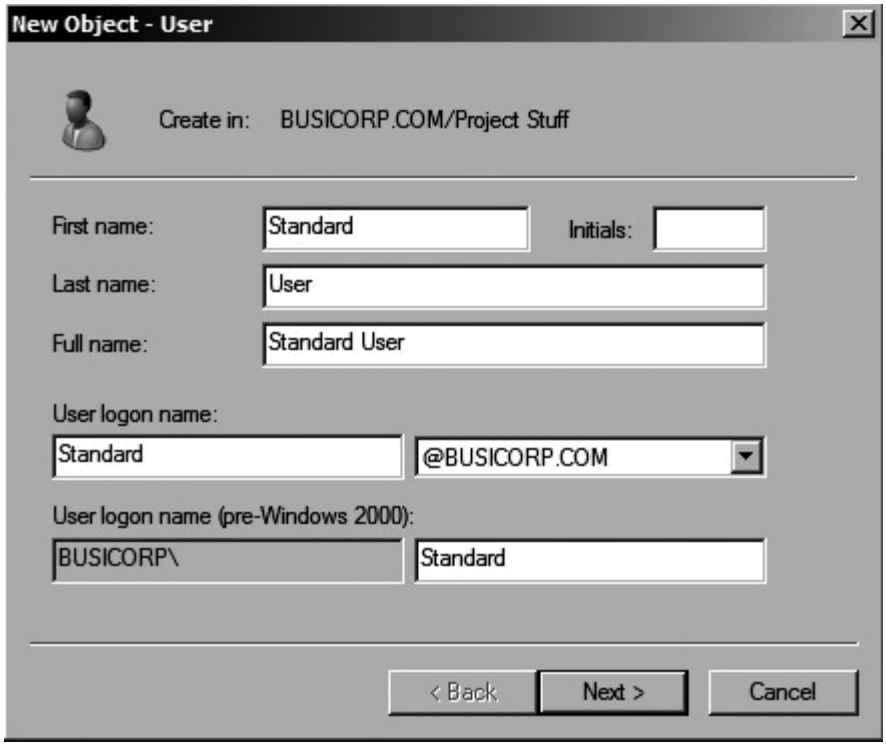

Figure 4-16: Creating a new User

10. Type **P@SSw0rd** as the password and uncheck **User must change password at next logon**, check **Password Never Expires**, and click *Next.*
11. Click *Finish.*

12. Repeat Steps 8 through 11 to create the following second user:
    First name: **Admin**
    Initials: **(leave blank)**
    Last Name: **User**
    Full name: **(leave at default)**
    User logon name: **MyAdmin**
    User logon name (pre-Windows 2000): **MyAdmin**
13. Which name would you use to log on to a domain client? How do the two users you created differ?

    _____

    _____

    _____

14. Right-click **Admin User** and select **Properties**.
15. Select the **Member Of** tab. What group(s) are listed?

    _____

    _____

16. Click *Add*.
17. Type **Administrators** and then click **Check Names**.
18. If the name verifies without any error, click *OK*. If there is an error, the most likely cause is that you misspelled the group name. What groups are listed now on the **Member Of tab**?

    _____

    _____

    _____

19. Click *OK* to close the **Admin User Properties** dialog box.
20. Right-click **Project Stuff**, and select **New** and then **Group**.
21. Leave the group scope at default and type the name **MyGroup** in the Group name field.
22. Click *OK* to create the group.
23. Right-click **MyGroup** and select **Properties**.
24. Select the **Members tab** and click *Add*.
25. Type **Standard; MyAdmin**, as shown in Figure 4-17, and click **Check Names**.

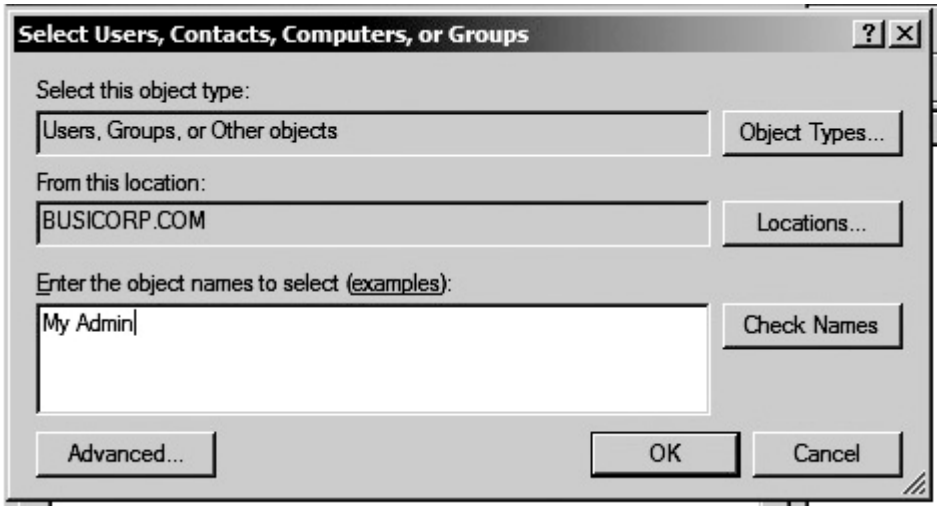

Figure 4-17: Adding group members

26. Click *OK* to add the members and then click *OK* to close the **Group Properties** dialog box.
27. Exit **Active Directory Users and Computers**.

■ Part C: Create Source Folders

You are creating folders to use as shared resources in the next project. You will create three folders at the root of the C: drive. You will be making changes to folder security that may be unfamiliar to you. You will be modifying local access permissions for one of the folders. Local access permissions determine user access when the user is logged on locally to the computer on which the resource is located. They can also impact access permissions when accessing a shared folder through an Active Directory network or in a peer-to-peer network when simple file sharing is not enabled.

1. Open the **Start** menu, select **Computer**, and then navigate to the root of the C: drive.
2. Right-click in the details pane, and select **New** and then **Folder** to create a new folder. Create three new folders with the following names:

   LimitedSource

   FullSource

   NoSource
3. For each of the folders, complete the following steps:
   a. Open the folder.
   b. Right-click the details pane, and select **New** and then **Text Document**.
   c. Name the document *foldernameText.txt*, for example; *LimitedSourceText.txt*
   d. Open the text document and type a line of text.
   e. Save the changes and close the text document.

4. Right-click **FullSource** and select **Properties**.
5. Select the **Security** tab. The gray check boxes indicate a security setting that the folder inherited from a point higher in the file hierarchy, in this case, from the drive root. The permissions shown in Figure 4-18 are the default permission settings.

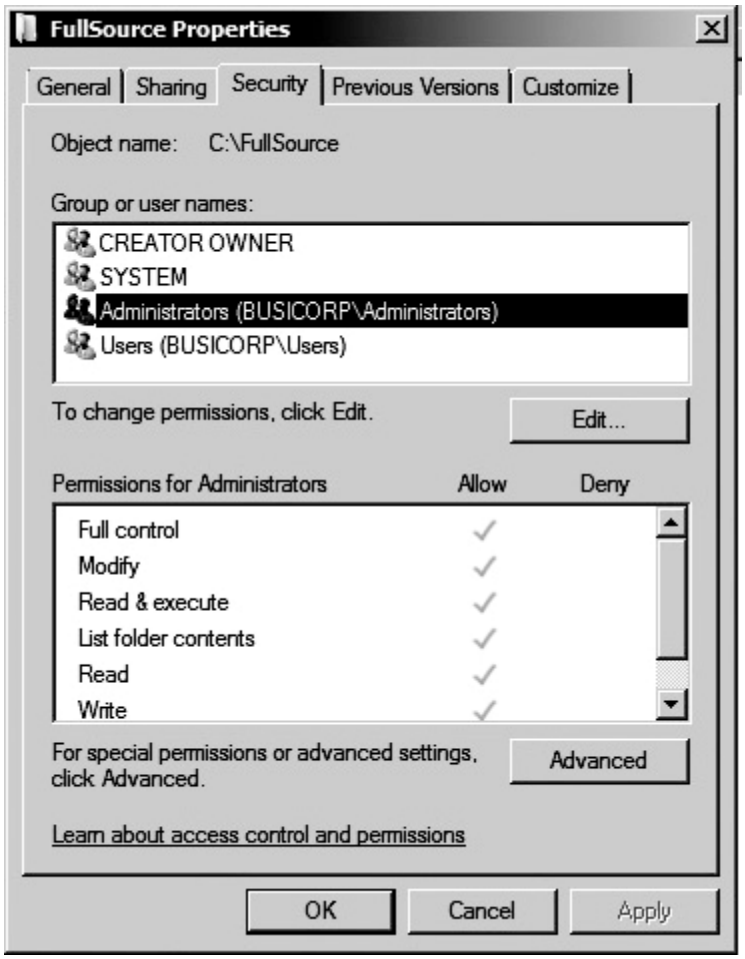

Figure 4-18: Default permissions

What permissions are allowed to the domain Users group? What permissions are allowed to the Administrators group?

_____

_____

_____

6. Click **Edit**, then **Add**, type MyGroup, click **Check Names**, and then click *OK*. You should see **MyGroup** in the name list.

7. If not already selected, select **MyGroup**. What permissions are granted by default?

   _____

   _____

   Notice that the check boxes are not gray for this group. That is because the permissions are not inherited. Instead, you are explicitly assigning the permissions to **MyGroup**.
8. Check **Full Control** in the Allow column. Your permissions should look like the example shown in Figure 4-19.

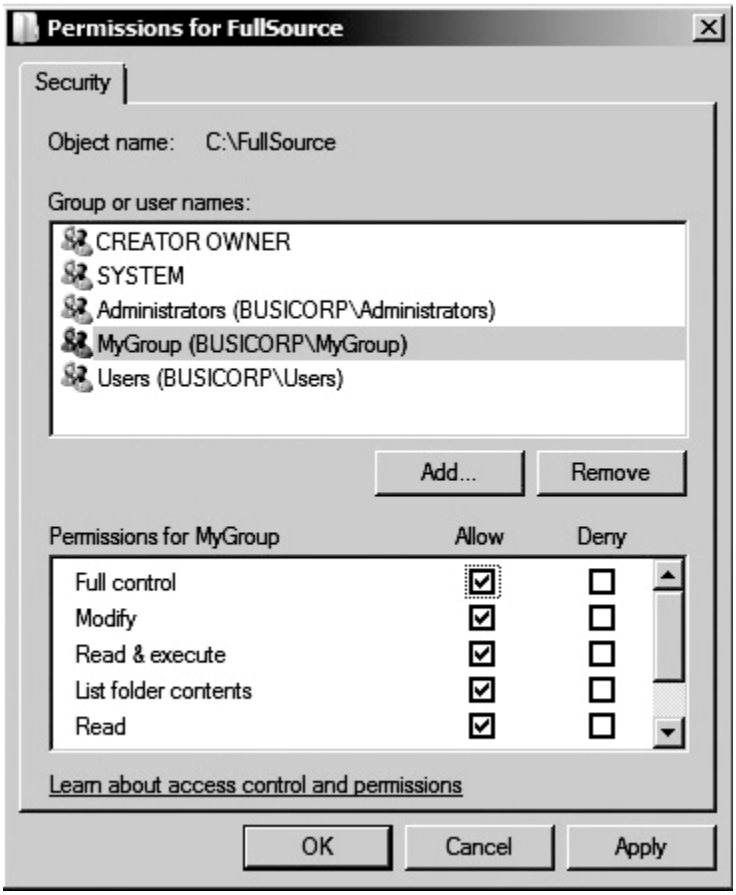

Figure 4-19: Explicit permission assignment

9. Click *OK*.
10. Right-click **NoSource** and select **Properties**. Add **My Group** to the permissions list and check **Full Control** in the **Deny** column.
11. Click *OK*. When prompted to verify your action, click *Yes*.
12. Exit **Computer**.

Project 4.5	Adding an Active Directory Client
Overview	You configure Active Directory clients, and servers for that matter, by having them join as domain members. After joining a domain, you can then use a domain user account to log on to the domain and access domain resources. You can also manage users and computers that belong to the domain. You continue setting up your Active Directory domain during this project. You will first make sure that you've ensured that your client will be kept up-to-date and then you add the computer as a domain member. To test, you'll log on with a domain user account.
Outcomes	After completing this project, you will know how to: ▲ configure automatic updates ▲ join a computer to a domain ▲ log on to a domain
What you'll need	To complete this project, you will need: ▲ complete Project 4.4 ▲ client computer running Windows 7 Professional or Windows 7 Enterprise
Completion time	30 minutes
Precautions	The instructions in this project assume you have a two-node network with one computer running Windows 7 Professional or Windows 7 Enterprise and one computer running Windows Server 2008. If the computers you are working with are part of a larger classroom network, review the project steps with your instructor or network administrator, because changes or additions to the installation instructions may be required.

■ Part A: Prepare to Join a Domain

You will need access to the DNS server responsible for the domain to complete these steps. If you do not know the IP address for your Windows Server 2008 computer, open a command prompt on the computer and run IPconfig. Record the address here for your reference:

IP Address: _____

1. Open the **Control Panel** and launch **Network and Internet/Network Connections**.
2. Right-click your local connection **(Local Area Connection)** and run **Properties**.
3. Select **Internet Protocol Version 4 (TCP/IP)** and click **Properties**.
4. If not already selected, select **Use the following DNS server addresses** and enter the IP address for your domain controller as the primary DNS server. The properties should look similar to those shown in Figure 4-20.

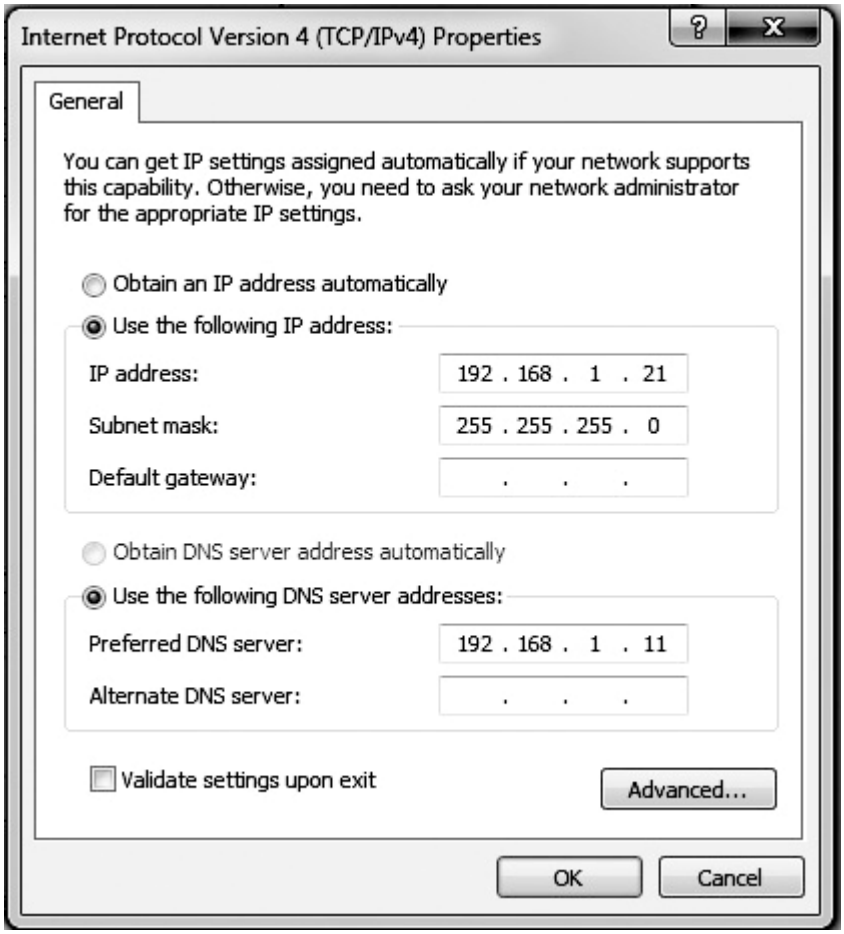

Figure 4-20: Configuring a primary DNS server

5. Click *OK* to save the property changes and then click *Close* to exit the connection properties.
6. You can use a TCP/IP utility ping to verify. Open the **Start** menu, point to **All Programs**, point to **Accessories**, and select **Command Prompt** to open a command prompt window.
7. Execute the following: ping servername. Replace servername with your Windows Server 2008 computer's name; for example, mainserv00. Note that you can also use the IP Address for MainServer00 (192.168.1.11) to verify the connection. Refer to Figure 4-21.

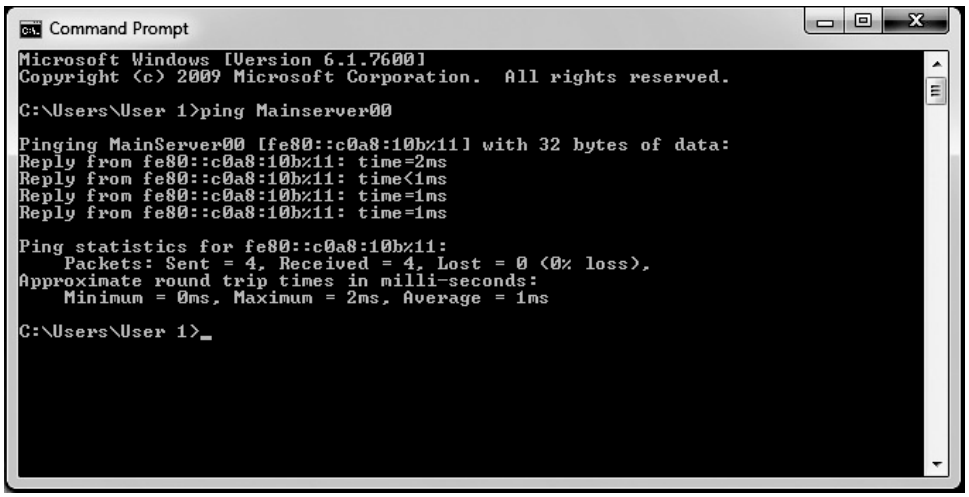

Figure 4-21: Configuring a primary DNS server

8. Note the difference in IP addresses when you use MainServer00 and the IPV4 address. What is the IP address?

_____

_____

9. Close the **Command Prompt** window.

■ Part B: Join a Domain

1. In the **Administrative Tools** window, click *Up* (in the toolbar) to return to the **Control Panel**.
2. In the **Control Panel**, open **System and Security/Systems**, and then select the **See the Name of This Computer in the Systems Properties** dialog box, as shown in Figure 4-22.

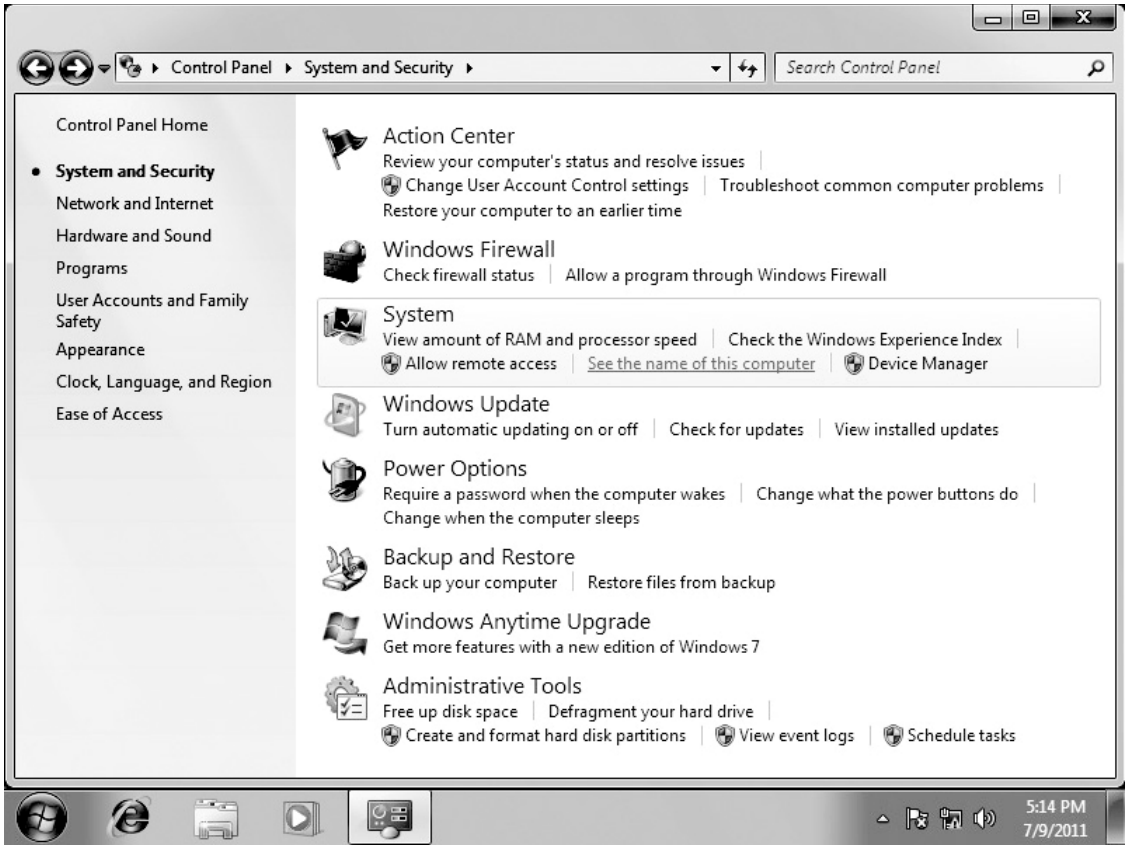

Figure 4-22: Computer name (as workgroup member)

3. Click **Change Settings**, as in Figure 4-23.

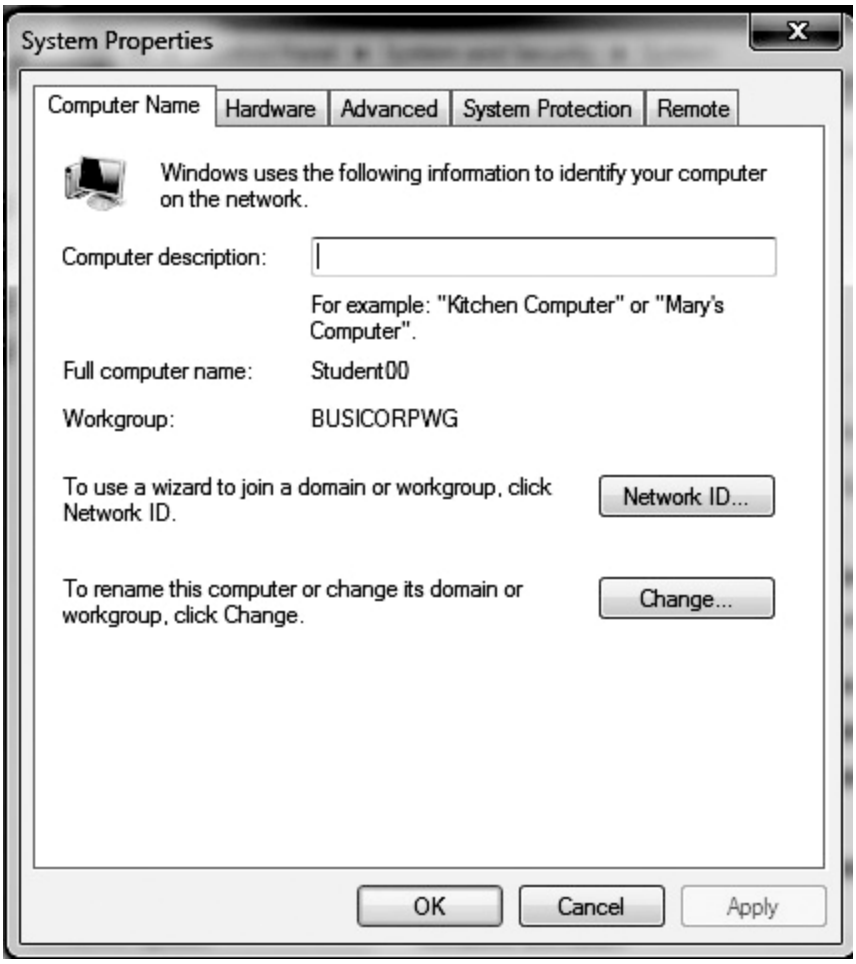

Figure 4-23: Changing Settings

4. Select **Domain** under Member of and type **BUSICORP.COM** as the domain name.
5. Click *OK*.
6. When prompted, type **Administrator** as the user name and the Administrator's password, and then click *OK*. When you promoted your server to domain controller, the local administrator was promoted to a domain administrator, but the password did not change.
7. A dialog box informs you that you have successfully joined the domain. Click *OK* to close the dialog box.
8. A dialog box informs you that you must restart the computer for the changes to take effect. Click *OK* to close the dialog box.
9. Click *OK* in the **System Properties** dialog box to close the dialog box.
10. A dialog box prompts you to restart your computer. Close any open windows or running applications and then click *Restart Now* in this dialog box to restart your computer.

■ Part C: Verify Membership Changes

1. Allow your computer to finish restart. How has the initial screen changed?

   _____

   _____

   _____

2. Press *Ctrl* + *Alt* + *Del* (Insert) and when the logon dialog box appears, click **Options**. What is listed in the **Log on to field** by default?

   _____

   _____

   _____

3. Select BUSICORP from the **Log on to** drop-down list.
4. Log on as MyAdmin, as Figure 4-24 shows.

Figure 4-24: Domain log on

5. After logging on, launch the **Control Panel**. The **Control Panel** is in **Category View** because Windows 7 Professional or Windows 7 Enterprise is configured at the default settings for a new user.
6. In the **Control Panel**, open **System and Security/Systems**, and then select the **See the Name of This Computer** in the **Systems Properties** dialog box. How has the full computer name changed?

_____

_____

7. Exit the **System Properties** dialog box and select **Administrative Tools** in the **System and Security** window.
8. Launch **Computer Management**.
9. Under **System Tools**, expand **Local Users and Groups** and select **Groups**, as in Figure 4-25.

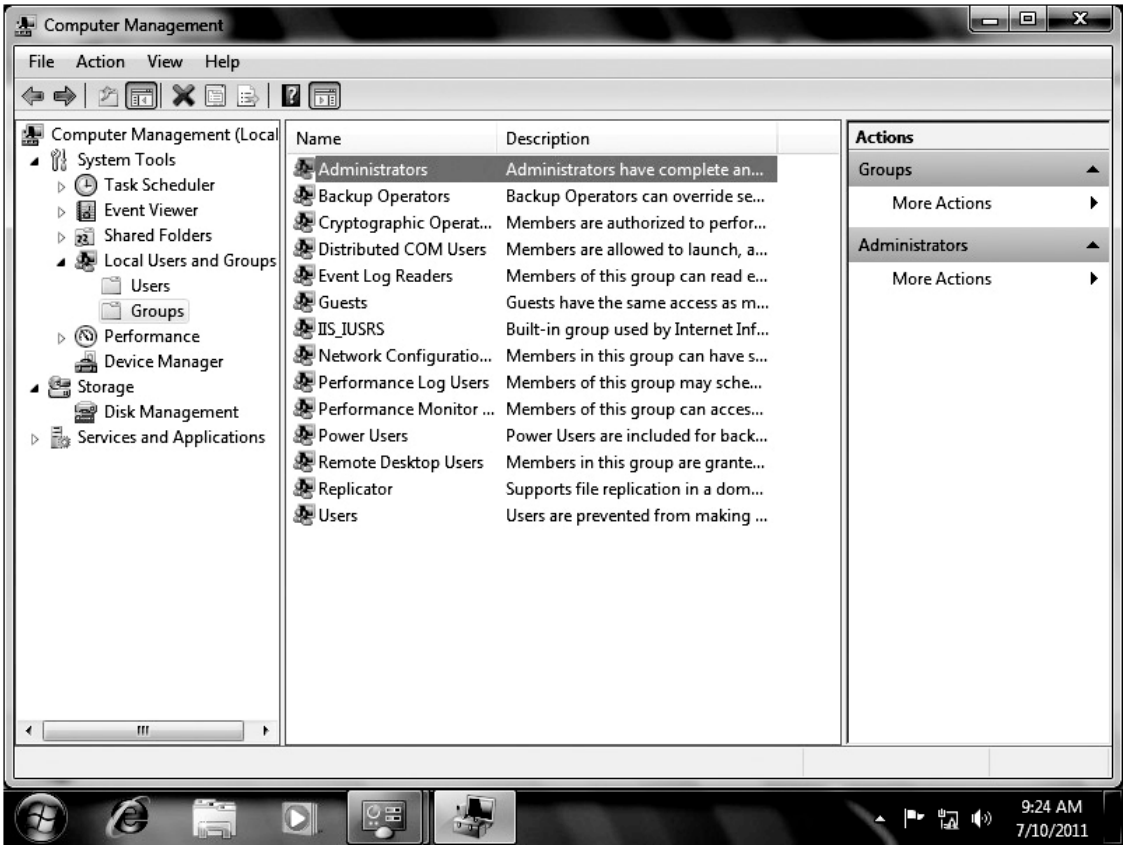

Figure 4-25: Computer Management

10. Right-click **Administrators** and select **Properties**. What users, if any, currently belong to this group? From the standpoint of security, what does this mean?

    _____

    _____

    _____

11. Close the **Group Properties** dialog box and exit **Computer Management**.
12. Exit **Control Panel**.

Project 4.6	Exploring an Active Directory Network
Overview	The procedures for resource sharing in an Active Directory domain are very similar to the procedures for sharing resources from a Windows 7 Professional or Windows 7 Enterprise computer with Simple File Sharing disabled. You can specify the share name, maximum number of users, and permissions. You can also configure the shared folder to be cached, so that the client computer can keep a local copy of the folder and its contents, but any discussion of caching is beyond the scope of this project. The procedures for accessing shared resources and mapping a local drive letter to a shared folder are also the same. The differences come primarily in how security is managed. Security is centrally managed in an Active Directory domain and is based on your domain user account. Permissions are based on those assigned to your user account and to any groups to which your account belongs. When determining your effective security, what you can actually do with the resource, both local and share permissions are considered. If access is explicitly denied to the user or a group to which the user belongs, as shared permissions or local permissions, the denied permissions override allowed permissions. There is one exception, in which an explicit allow can override an inherited deny. As you might guess, permission assignments in an Active Directory domain can become quite complex if you aren't careful. One key to effective domain management is keeping permission assignments as simple as possible. For example, whenever possible, you should assign permissions at the group level rather than the user level and limit explicit user permission assignments to special case exceptions.
Outcomes	After completing this project, you will know how to: ▲ share folder resources ▲ access shared resources
What you'll need	To complete this project, you will need: ▲ to have completed Projects 4.4 and 4.5 ▲ your Windows 7 Professional or Windows 7 Enterprise and Windows Server 2008 computers

Completion time	60 minutes (approximate, depending on computer configuration and speed)
Precautions	If you are performing the project as part of a larger classroom network, your instructor may provide alternate steps. If you are performing this project on an existing network, you must review the project steps with your network administrator. Your network administrator may need to make changes or additions to the project steps.

■ Part A: Review Client Membership

You will complete these project steps on your domain controller. You should be logged on as Administrator to your domain controller.

1. Open the **Start** menu, point to **Administrative Tools**, and then select **Active Directory Users and Computers**. If necessary, expand your domain.
2. Select **Computers**. You should see your client computer listed, as shown in Figure 4-26.

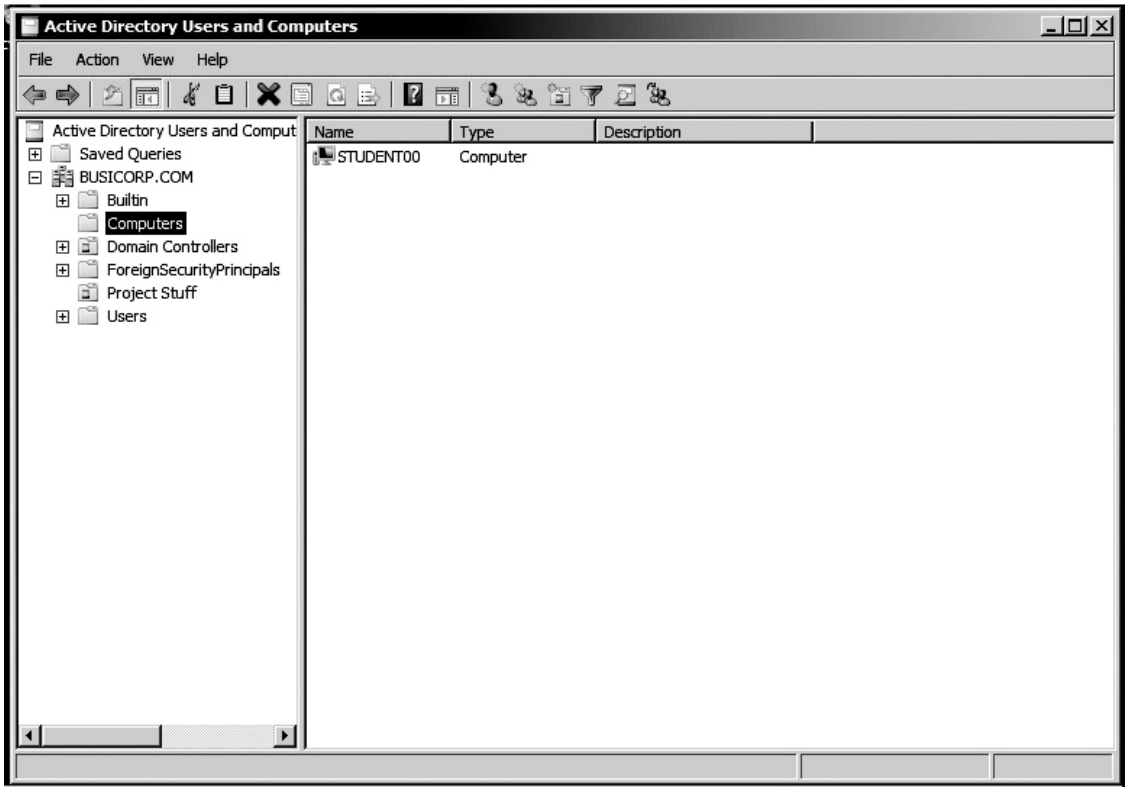

Figure 4-26: Member computer

When was your Windows 7 computer added to the Computers container?

_____

_____

3. Right-click your client computer and select **Properties**. What is given as the computer's role?

_____

_____

4. Select the **Operating System** tab. What is the operating system and service pack level? How could you change this information about the computer?

_____

_____

5. Review the properties on the remaining tabs. Why don't the computer properties list any information about the computer user?

_____

_____

6. Select **Project Stuff** and verify that the users and group you created in Project 4.4 are listed.
7. Close the **Computer Properties** dialog box and exit **Active Directory Users and Computers**.

■ Part B: Share Resources

You will complete these project steps on your domain controller. You should be logged on as Administrator to your domain controller.

1. Launch **Computer** and navigate to the root of the C: drive.
2. Right-click **FullSource** folder and select **Share**. . . . Select the **MyGroup and Co-Owner** as the permission. And click **Share** as in Figure 4-27.

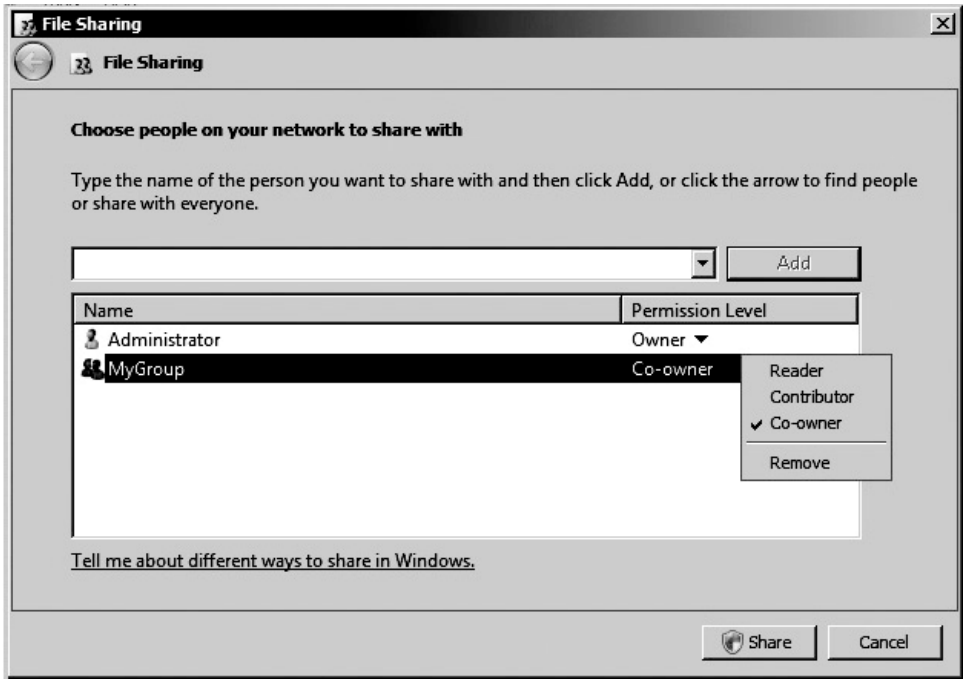

Figure 4-27: Sharing resources

3. You will receive **File Sharing**. Notice that your file is shared as shown in Figure 4-28.

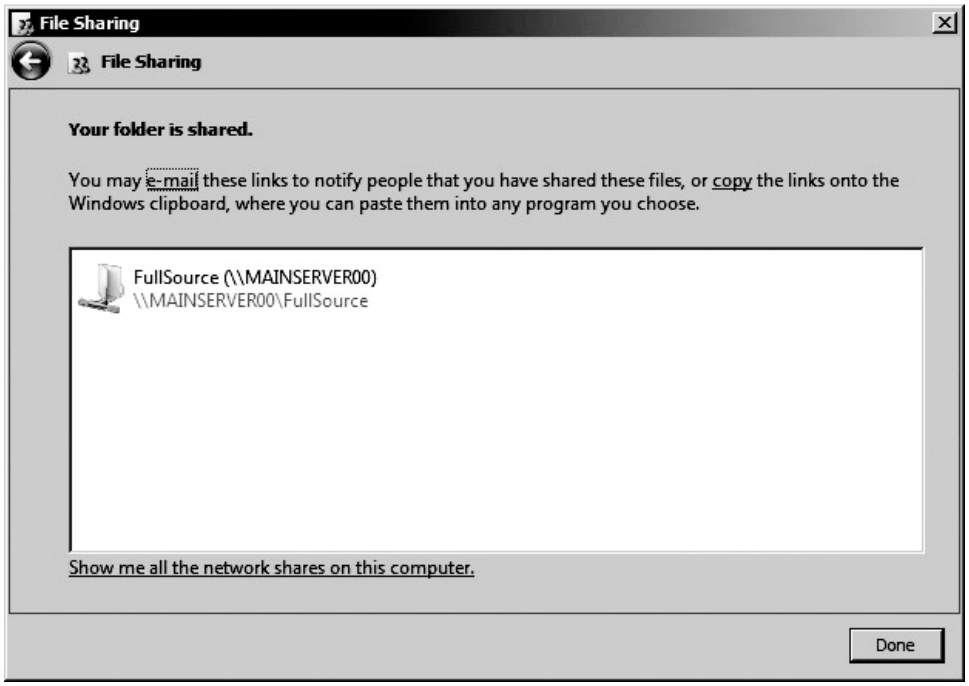

Figure 4-28: Share permissions

Why should you assign the permissions to the group instead of the group members?

_____

_____

4. Repeat Steps 2 and 3 to share NoSource with the same share permissions.
5. Repeat Steps 2 and 3 to share LimitedSource with the following change: Allow the Read permission only for MyGroup.

■ Part C: Access Resources

Complete these project steps on the computer running Windows 7 Professional or Windows 7 Enterprise. You should be logged on as the user account Standard.

1. Launch **My Computer** and click **Networks/MAINSERVER00** to display the folder tree view in the left-hand pane as in Figure 4-29.

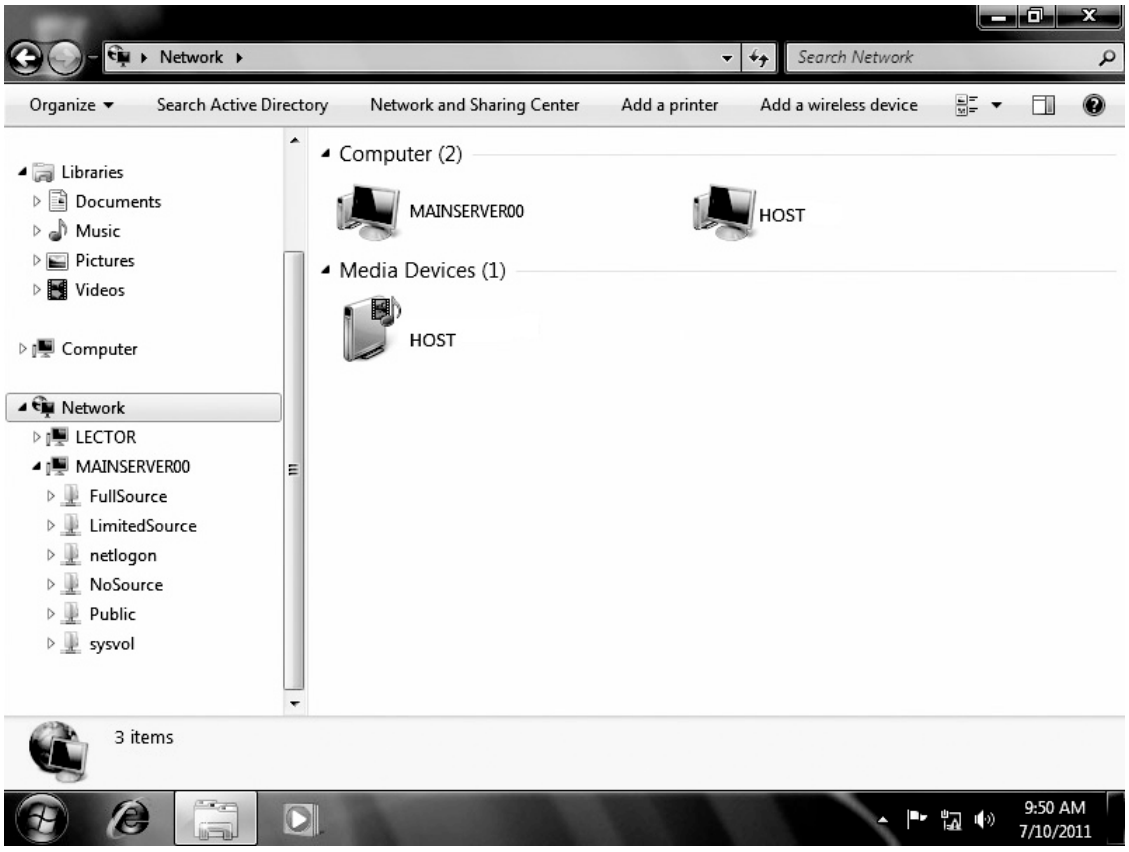

Figure 4-29: Accessing shared resources

2. Attempt the following with each of the shared resources during this project (FullSource, LimitedSource, and NoSource):
   a. Select the folder in the tree view to view the folder contents.
   b. Open the sample text document.
   c. Edit and save the sample text document.
   d. Create a new text file.
   e. Map a network drive for the shared folder. To map a network drive, right-click the folder, select **Map Network Drive**, and click *Finish* to accept the default drive ID.

Record your results in Table 4-1. Enter **successful** for any action you could complete. For any action you were not able to complete, explain what happened.

Table 4-1: Access Results

	FullSource	**LimitedSource**	**NoSource**
Access folder			
Open text file			
Modify text file			
Add new text file			
Map network drive			

The share permissions for NoShare allowed Full Control for MyGroup. Why did you get the results that you saw? ***Tip:*** Check the folder's local and share security on the domain controller.

4. Close **My Computer**.