Accessing and Sharing Network Resources

Many home and small office networks exist for no other reason than to share a broadband Internet connection. The administrators of those networks attach a broadband modem to a router, configure the router, run some ethernet cable (or set up wireless connections), and then they never think about the network again.

There's nothing wrong with this scenario, of course, but there's something that just feels, well, incomplete about such a network. Sharing an Internet connection is a must for any modern network, but networking should be about sharing so much more: disk drives, folders, documents, music, photos, videos, recorded TV shows, printers, scanners, CD and DVD burners, projectors, and more.

This expanded view of networking is about working, playing, and connecting with your fellow network users. It is, in short, about sharing, and sharing is the subject of this chapter. You learn how to access those network resources that others have shared, and you learn how to share your own resources with the network.
Accessing Shared Network Resources

After you connect to the network, the first thing you’ll likely want to do is see what’s on the network and access the available resources. Vista gives you two ways to get started:

■ Select Start, Network.
■ In the Network and Sharing Center, click View Network Computers and Devices.

Either way, you see the Network window, which lists the main network resources, such as the computers and media devices in your workgroup. As you can see in Figure 8.1, Details view shows you the resource name, category, workgroup or domain name, and the name of the network profile.

Viewing a Computer’s Shared Resources

Your Network window will likely show mostly computers, and those are the network items you’ll work with most often. (The computers display an icon that shows a monitor and mini tower computer; if you’re not sure, select View, Details and look for the objects that have Computer in the Category column.) If you don’t see a particular computer, it likely means that the machine is
either turned off or is currently in Sleep mode. You need to either turn on or
wake up the computer.

➔ You may be able to remotely wake up a computer that’s in Sleep mode; see “Using a Net-
work Connection to Wake Up a Sleeping Computer,” p. 151.

If you see the computer you want to work with, double-click the computer’s
icon. One of two things will happen:

■ If your user account is also a user account on the remote computer,
  Windows Vista displays the computer’s shared resources.

■ If your user account is not a user account on the remote computer, and
  the remote computer has activated password protected sharing (see
  “Using Password Protected Sharing,” later in this chapter), Windows
  Vista displays the Connect to Computer dialog box (where Computer
  is the name of the remote computer). You need to type the username
  and password of an account on the remote computer, as shown in
  Figure 8.2.

![Connect to PAULSPC](image)

**FIGURE 8.2**
You may need to log on to the remote computer to see its shared resources.

Figure 8.3 shows a typical collection of shared resources for a computer.
The computer shown in Figure 8.3 is sharing a folder named Data, two hard
drives (Drive D and Drive G), a DVD drive, and a printer. The computer is also
sharing two folders that that many Vista computers automatically share:

**Public** This folder is open to everyone on the network and usually pro-
vides users with full read/write access. However, it’s also possible to
protect this folder by giving users read-only access, or by not dis-
playing the Public folder at all. See “Sharing the Public Folder,”
later in this chapter.
FIGURE 8.3
Double-click a network computer to see its shared resources.

This folder contains the computer’s installed printers. Vista usually places an icon for each shared printer in the computer’s main folder, too. You can control whether Vista displays the Printers folder; see “Activating Printer Folder Sharing,” later in this chapter.

Double-click a shared folder to see its contents. For example, Figure 8.4 displays the partial contents of the Data folder shown earlier in Figure 8.3. What you can do with the shared folder’s contents depends on the permissions the computer owner has applied to the folder. See “Sharing a Resource with the File Sharing Wizard” and “Sharing a Resource with Advanced Permissions,” later in this chapter.

Working with Network Addresses
In Figure 8.4, the Address bar shows the breadcrumb path to the shared folder:

Network > PAULSPC > Data

caution Double-clicking a network computer to see its shared resources works because the default action (which you initiate by double-clicking) for a network computer is to run the Open command, which opens the computer’s shared resources in a folder window. However, not all the devices you see in the Network window have Open as the default action. For example, with media devices, the default action is either Open Media Player or Open Media Sharing. Other devices have more dangerous default actions. On some routers, for example, the default action is Disable, which disconnects the router’s Internet connection! So, instead of just double-clicking any device to see what happens, it’s better to right-click the device and examine the list of commands. In particular, make note of the command shown in bold type, which is the default action.
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Clicking an empty section of the Address bar (or the icon that appears on the left side of the Address bar) changes the breadcrumb path to the following network address, as shown in Figure 8.5:

\PAULSPC\Data

Network address

FIGURE 8.4
Double-click a shared folder to see its contents.

FIGURE 8.5
Click an empty section of the Address bar to see the network address.
As you can see, a network address uses the following format:

```\ComputerName\ShareName```

Here, `ComputerName` is the name of the network computer, and `ShareName` is the name of the shared resource on that computer. This format for network addresses is known as the Universal Naming Convention (UNC). If the UNC refers to a drive or folder, you can use the regular Windows path conventions to access folders and subfolders on that resource. For example, if the resource `Data` on PAULSPC has a `Documents` folder, the network address of that folder would be as follows:

```\PAULSPC\Data\Documents```

Similarly, if that `Documents` folder has a `Writing` subfolder, here’s the network address of that subfolder:

```\PAULSPC\Data\Documents\Writing```

So, although you’ll most often use icons in folder windows to navigate through a computer’s shared resources, network addresses give you an alternative way to specify the resource you want to work with. Here are some examples:

- In the Network Explorer, click an empty section of the Address bar, type the network address for a shared resource, and then press Enter.
- Press Windows Logo+R (or select Start, All Programs, Accessories, Run) to open the Run dialog box. Type the network address for a shared resource, and then click OK to open the resource in a folder window.
- In a program’s Open or Save As dialog box, you can type a network address in the File Name text box.
- In a Command Prompt session (select Start, All Programs, Accessories, Command Prompt), type `start`, then a space, then the network address of the resource you want to open. Here’s an example:

  ```start \paulspc\data\documents```

- In a Command Prompt session, you can use a network address as part of a command. For example, to copy a file named `memo.doc` from `\PAULSPC\Documents\Downloads\` to the current folder, you’d use the following command:

  ```copy '\paulspc\data\documents\memo.doc'```
CHAPTER 8 Accessing and Sharing Network Resources

Mapping a Network Folder to a Local Drive Letter

Navigating a computer’s shared folders is straightforward, and is no different from navigating the folders on your own computer. However, you might find that you need to access a particular folder on a shared resource quite often. That’s not a problem if the folder is shared directly—see, for example, the shared Data folder in Figure 8.3. However, the folder you want might be buried several layers down. For example, you may need to open the Data folder, then the Documents folder, then Writing, then Articles, and so on. That’s a lot of double-clicking. You could use the network address, instead, but even that could get quite long and unwieldy. (And, with Murphy’s law still in force, the longer the address, the greater the chance of a typo slipping in.)

You can avoid the hassle of navigating innumerable network folders and typing lengthy network addresses by mapping the network folder to your own computer. Mapping means that Windows assigns a drive letter to the network folder, such as G: or Z:. The advantage here is that now the network folder shows up as just another disk drive on your machine, enabling you to access the resource quickly by selecting Start, Computer.

Creating the Mapped Network Folder

To map a network folder to a local drive letter, follow these steps:

1. Select Start, right-click Network, and then click Map Network Drive. (In any folder window, you can also press Alt to display the menu bar, and then select Tools, Map Network Drive.) Windows Vista displays the Map Network Drive dialog box.

You might also find that mapping a network folder to a local drive letter helps with some older programs that aren’t meant to operate over a network connection. For example, I have a screen-capture program that I need to use from time to time. If I capture a screen on another computer and then try to save the image over the network to my own computer, the program throws up an error message telling me that the destination drive is out of disk space (despite having, in fact, 100GB or so of free space on the drive). I solve this problem by mapping the folder on my computer to a drive letter on the other computer, which fools the program into thinking it’s dealing with a local drive instead of a network folder.

If you use a removable drive, such as a memory card or flash drive, Windows Vista assigns the first available drive letter to that drive. This can cause problems if you have a mapped network drive that uses a lower drive letter. Therefore, it’s good practice to use higher drive letters (such as X, Y, and Z) for your mapped resources.
2. The Drive drop-down list displays the last available drive letter on your system, but you can pull down the list and select any available letter.

3. Use the Folder text box to type the network address of the folder, as shown in Figure 8.6. (Alternatively, click Browse, select the shared folder in the Browse for Folder dialog box, and then click OK.)

![Map Network Drive dialog box](image)

**FIGURE 8.6**
Use the Map Network Drive dialog box to assign a drive letter to a network resource.

4. If you want Windows Vista to map the network folder to this drive letter each time you log on to the system, leave the Reconnect at Logon check box activated.

5. Click Finish. Windows Vista adds the new drive letter to your system and opens the new drive in a folder window.

To open the mapped network folder later, select Start, Computer, and then double-click the drive in the Network Location group (see Figure 8.7).

**tip** By default, Vista connects you to the network folder using your current username and password. If the network folder requires a different username and password, click the Different User Name link to open the Connect As dialog box. Type the account data in the User Name and Password text boxes, and then click OK.
FIGURE 8.7
After you map a network folder to a local drive letter, the mapped drive appears in the Computer window for easier access.

Mapping Folders at the Command Line

You can also map a network folder to a local drive letter by using a command prompt session and the `NET USE` command. Although you probably won't use this method very often, it's handy to know how it works, just in case. Here's the basic syntax:

```
NET USE [drive] [share] [password] [/USER:user]
```

- `drive`: The drive letter (followed by a colon) of the local drive to which you want the network folder mapped.
- `share`: The network address of the folder.
- `password`: The password required to connect to the shared folder (that is, the password associated with the username, specified next).
- `/USER:user`: The username you want to use to connect to the shared folder.
- `/PERSISTENT:[YES | NO]`: Add YES to reconnect the mapped network drive the next time you log on.
- `/DELETE`: Deletes the existing mapping that's associated with `drive`.
For example, the following command maps the shared folder\PAULSPC\Data\Writing\Books to the Z: drive:

```
net use z: \paulspc\data\writing\books \persistent:yes
```

### Disconnecting a Mapped Network Folder

If you no longer need to map a network resource, you should disconnect it by following these steps:

1. Select Start, Computer to open the Computer window.
2. Right-click the mapped drive, and then click Disconnect.
3. If there are files open from the resource, Windows Vista displays a warning to let you know that it's unsafe to disconnect the resource. You have two choices:
   - Click No, close all open files from the mapped resource, and then repeat steps 1 and 2.
   - If you're sure there are no open files, click Yes to disconnect the resource.

### Creating a Network Location for a Remote Folder

When you map a network folder to a drive on your computer, Vista creates an icon for the mapped drive in the Computer folder’s Network Locations group. However, you may find that the supply of available drive letters is getting low if your computer has multiple hard drives, multiple CD or DVD drives, a memory card reader, a flash drive or two, and so on.

To work around this problem, you can add your own icons to the Computer folder’s Network Locations group. These icons are called, appropriately enough, network locations, and each one is associated with a particular network folder. (They’re similar to the network places you could create in Windows XP.) That is, after you create a network location, you can access the network folder associated with that location by double-clicking the icon. This is usually a lot faster than drilling down through several layers of folders on the network computer, so create network locations for those network folders you access most often.

Follow these steps to create a network location:

1. Select Start, Computer to open the Computer folder.
2. Right-click an empty section of the Computer folder, and then click Add a Network Location. Vista launches the Add Network Location Wizard.

3. Click Next in the initial wizard dialog box.

4. Select Choose a Custom Network Location, and then click Next.

5. Type the network address of the folder you want to work with. Notice that as you enter the address, the Add Network Location Wizard displays a list of objects that match what you’ve typed; so, you can save some typing by selecting items from the lists as they appear (see Figure 8.8). You can also click Browse to use the Browse for Folder dialog box to select the network folder.

6. Click Next.

7. Type a name for the network location and click Next.

8. Click Finish. The Add Network Location Wizard adds an icon for the network folder to the Computer window, as shown in Figure 8.9.
FIGURE 8.9
After you associate a network folder with a network location, an icon for the new location appears in the Computer window.

Accessing a Shared Printer

Except for perhaps disk drives, the most commonly shared device on small networks is almost certainly the printer. This makes sense because almost everyone needs to print something sometime, and those print jobs vary: One day it’s a letter to send to the laser printer, and the next it’s a photo to send to the ink-jet. Of course, it’s wasteful (and decidedly impractical) to attach both a laser printer and an ink-jet printer to every computer. It’s just so much easier (and cheaper) to share one of each type of printer on the network so that everyone can use them.

To access a shared printer, you must connect to it. Here are the steps to follow:

1. Open the network computer or print server that has the printer you want to use.
2. Right-click the shared printer.
3. Click Connect. If a Vista driver for the shared printer isn’t already installed on your computer, Vista warns you that it must install the driver to use the shared printer.
4. Click Install Driver. The User Account Control dialog box appears.
5. Enter your UAC credentials to continue. Vista installs the printer driver.
You can also add a shared network printer using Vista’s Add Printer Wizard. Follow these steps:

1. Select Start, Control Panel to open the Control Panel window.
2. Click the Printer link under the Hardware and Sound icon. Vista opens the Printers window.
3. Click Add a Printer in the task pane to open the Add Printer Wizard.
4. Click Add a Network, Wireless or Bluetooth Printer. Vista searches for shared printers on the network and then displays a list of the printer it found, as shown in Figure 8.10.

5. Select the network printer you want to use.
6. Click Next. If a Vista driver for the shared printer isn’t already installed on your computer, Vista warns you that it must install the driver to use the shared printer.
7. Click Install Driver. The User Account Control dialog box appears.
8. Enter your UAC credentials to continue. Vista installs the printer driver.

FIGURE 8.10
The Add Printer Wizard displays a list of the shared printers that it found on your network.

note
The default printer is the printer that is selected automatically whenever you open the Print dialog box. Also, it’s the printer that Vista uses when you click the Print toolbar button in most applications, which sends the current document directly to the printer without going through the Print dialog box.
9. If you want to use the shared printer as your default printer, leave the Set as Default Printer check box activated and click Next.

10. Click Finish.

After you connect to a shared printer, Vista adds it to the Printers window. The name of the icon you see takes the following general form:

`PrinterName` on `ComputerName`

Here, `PrinterName` is the name of the printer as given by its device driver, and `ComputerName` is the name of the computer or print server to which the printer is attached. For example, Figure 8.11 shows a connected shared printer that uses the following name:

`HP LaserJet 5P/5MP PostScript on Paulspc`

![Remote printer](image)

**FIGURE 8.11**
When you connect to a remote shared printer, Vista adds an icon for the printer to your Printers window.

**Sharing Resources with the Network**

Small networks are normally egalitarian affairs because no computer is in any significant sense more important than the others. One of the ways that this digital equality manifests itself is via the universal sharing of at least some resources on each computer. People rarely make their entire computer available to their fellow network users, but it’s a rare machine that doesn’t have at least a drive or folder to share.
Fortunately, when it comes to sharing resources on the network, Windows Vista comes with quite a few options that enable you to share what resources you want and to control how others can access those resources. Network sharing in Vista begins by configuring the basic sharing options, of which there are five in all: general file sharing, Public folder sharing, printer sharing, password-protected sharing, and media sharing.

The next four sections cover the first four of these options; I'll leave media sharing to Chapter 9, “Setting Up Vista as a Digital Media Hub.” To view and work with these options, you need to open the Network and Sharing Center (as described in Chapter 5, “Working with Vista’s Basic Network Tools and Tasks,” in the section “Working with Vista’s Basic Network Tools and Tasks”).

➔ For the details about media sharing, see “Sharing Your Media Player Library,” p. 207.
➔ To learn how to open the Network and Sharing Center, see “Accessing the Network and Sharing Center,” p. 125.

**Activating File and Printer Sharing**

In the Network and Sharing Center’s Sharing and Discovery section, the File Sharing setting covers general file and printer sharing. If the current setting is Off, follow these steps to activate file and printer sharing:

1. Click the downward-pointing arrow to the right of the File Sharing setting to expand the setting.

2. Select the Turn On File Sharing option, as shown in Figure 8.12. This will allow other people on the network to access your shared files and printers.

**FIGURE 8.12**

*Expand the File Sharing setting, and then activate the Turn On File Sharing option.*
3. Click Apply. The User Account Control dialog box appears.

4. Enter your UAC credentials to put the new setting into effect.

Sharing the Public Folder

The Public Folder Sharing setting covers sharing the Public folder. If the current setting is Off, here are the steps to follow to activate sharing the Public folder:

1. Click the downward-pointing arrow to the right of the Public Folder Sharing setting to expand the setting.

2. Select one of the following options (see Figure 8.13):

- **Turn On Sharing So Anyone with Network Access Can Open Files.** Select this option to share the Public folder, but allow network users only to read files in that folder. (That is, users can't create new files or change existing files.)

- **Turn On Sharing So Anyone with Network Access Can Open, Change, and Create Files.** Select this option to share the Public folder, and allow network users to read, edit, and create new files in that folder.

3. Click Apply. The User Account Control dialog box appears.

4. Enter your UAC credentials to put the new setting into effect.
Activating Printer Folder Sharing

The Printer Sharing setting covers sharing the Printers folder. If the current setting is Off, follow these steps to activate sharing for the Printers folder:

1. Click the downward-pointing arrow to the right of the Printer Sharing setting to expand the setting.
2. Select the Turn On Printer Sharing option, as shown in Figure 8.14. This will allow other people on the network to access your Printers folder.
3. Click Apply. The User Account Control dialog box appears.
4. Enter your UAC credentials to put the new setting into effect.

Using Password Protected Sharing

The Password Protected Sharing setting covers sharing with password protection. That is, when you turn on password protected sharing, only people who know the username and password of an account on your computer can access your shared resources. If the current setting is Off, follow these steps to activate password protected sharing:

1. Click the downward-pointing arrow to the right of the Password Protected Sharing setting to expand the setting.
2. Select the Turn On Password Protected Sharing option, as shown in Figure 8.15.
3. Click Apply. The User Account Control dialog box appears.
4. Enter your UAC credentials to put the new setting into effect.

Using Public Folder Sharing

If you have the Public Folder Sharing setting turned on (see “Sharing the Public Folder,” earlier in this chapter), you can use the Public folder to share files or other folders with the network. This is often the easiest way to share resources with the network because you only have to worry about one shared location, which keeps your life simple and makes it easier for other people to find what you’re sharing.

To get to the Public folder, follow these steps:
1. Open any folder window.
2. Click Folders to display the Folders list.
3. At the top of the list, click Desktop.
4. Double-click the Public icon.

Figure 8.16 shows the default Public folder, which includes a half dozen sub-folders: Public Documents, Public Downloads, Public Music, Public Pictures, Public Videos, and Recorded TV.
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FIGURE 8.16
The Public folder and its subfolders offer a simple way to share files and folders with the network.

Creating User Accounts for Sharing

If you activated the Password Protected Sharing option (see “Using Password Protected Sharing,” earlier in this chapter), you have to do one of the following:

- **Set up separate accounts for each user that you want to access a shared resource.** Do this if you want to assign each user a different set of permissions, or if you want the usernames and passwords to match each user’s local username and password.

- **Set up a single account for all remote users to use.** Do this if you want to assign the same set of permissions for all users.

Here are some notes to bear in mind for creating users who will access your computer over a network:

- Windows Vista does not allow users without passwords to access network resources. Therefore, you must set up your network user accounts with passwords.

- The usernames you create do not have to correspond with the names that users have on their local machines. You’re free to set up your own usernames, if you like.

- If you create a user account that has the same name and password as an account of a user on his or her local machine, that user will be able to access your shared resources directly. Otherwise, as you saw earlier (see Figure 8.2), a Connect To dialog box appears so that the user can enter the username and password that you established when setting up the account on your computer.
You create a new user account in Windows Vista by following these steps:

1. Select Start, Control Panel to open the Control Panel window.
2. Under the User Accounts and Family Safety icon, click the Add or Remove User Accounts link. The User Account Control dialog box appears.
3. Enter your UAC credentials to continue. Vista displays the Manage Accounts window.
5. Type the name for the account. The name can be up to 20 characters and must be unique on the system.
6. Activate either Administrator (to add the user to the Administrators group) or Standard User (to add the user to the Users group).
7. Click Create Account. Vista creates the new account and returns you to the Manage Accounts window.
8. Click the account you just created. The Change An Account window appears.
9. Click the Create a Password link. Vista displays the Create Password window.
10. Type the user’s password in the New Password and Confirm New Password text boxes.
11. Use the Type a Password Hint text box to type a reminder for the user in case he forgets the password.
12. Click Create Password.

Sharing a Resource with the File Sharing Wizard

By default, Windows Vista comes with the File Sharing Wizard activated. This is a simplified sharing feature that removes some of the complexity from sharing folders and files. However, it also removes much of the power and flexibility of sharing, so Vista also enables you to turn off the File Sharing Wizard. I show you how to do that in the next section. So that you can compare the two methods, here are the steps to follow to use the File Sharing Wizard to share a folder or file:

1. Select Start, and then click your username to open your user profile folder.
2. Click the folder you want to share. If you want to share a subfolder or file, instead, open its folder, and then click the subfolder or file.
3. Click the Share button in the task pane. Vista launches the File Sharing Wizard, which asks you to choose the user accounts you want to share the item with.

4. Type the username and click Add.

5. Repeat step 4 as necessary to share the folder or file with other users.

6. For each user you added, assign a permission level by clicking the downward-pointing arrow and selecting one of the following (see Figure 8.17):

   **Reader**  
   This is the default level, and it means the user can only view the shared file or folder and open its contents. The user can't create, change, or delete anything.

   **Contributor**  
   This level means that the user can add new files to the shared folder, and that the user can make changes to or delete any file that the user has added to the folder.

   **Co-owner**  
   This level means that the user can create new items, and that the user can make changes to or delete any item.

   ![File Sharing Wizard](image)

   **FIGURE 8.17**

   *The Sharing Wizard asks you to choose the permission level for each user.*

7. Click Share. The User Account Control dialog box appears.

8. Enter your UAC credentials to continue. The File Sharing Wizard sets up sharing for the file or folder.
9. If you want to send an email to the users to let them know the folder or file is shared, click the E-mail link; otherwise, click Done.

If you no longer want to share a folder or file, you can change the sharing using either of the following methods:

- **To remove a user from the sharing.** Follow steps 1 through 3 in this section, and then click Change Sharing Permissions to display the list of shared users. Click the permission level for the user you want to work with, and then click Remove.

- **To stop sharing the folder or file entirely.** Follow steps 1 through 3 in this section, and then click Stop Sharing.

➔ To learn how to share a folder using advanced permissions, see “Setting Sharing Permissions on Shared Folders,” p. 315.

### Viewing Your Shared Resources

After a while, you might lose track of which folders you’ve shared. You could look through all your folders to look for those that have the Shared icon attached, but that’s too much work, and you could easily miss some shared folder. Fortunately, Windows Vista offers a couple of easier methods. Open the Network and Sharing Center and then use the following two links at the bottom of the window:

- **Show Me All the Files and Folders I Am Sharing.** Click this link to open the Shared By Me search folder.

- **Show Me All the Shared Network Folders on This Computer.** Click this link to open a folder window showing your computer’s shared folders and printers.

### From Here

- For the steps required to connect to a standard wireless network, see “Making Wireless Network Connections,” p. 113.

- To learn how to open the Network and Sharing Center, see “Accessing the Network and Sharing Center,” p. 125.

- For a more detailed look at the types of items you see in the Network window, see “Viewing Network Computers and Devices,” p. 130.
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- To learn more about wired connections, see Chapter 6, “Managing Network Connections,” p. 139.
- For information about how to remotely wake up a computer that’s in Sleep mode, see “Using a Network Connection to Wake Up a Sleeping Computer,” p. 151.
- To learn more about wireless connections, see Chapter 7, “Managing Wireless Network Connections,” p. 157.
- For the details about media sharing, see “Sharing Your Media Player Library,” p. 207.
- To learn how to share a folder using advanced permissions, see “Setting Sharing Permissions on Shared Folders,” p. 315.