

Chapter 6

Managing the Interface

After you install Windows 7, you need to install and configure the system. In this chapter, we examine the process of configuring the Windows 7 environment, beginning with an overview of the main configuration utilities.

Control Panel is one of the most important configuration areas of Windows 7. The Control Panel includes many icons that can help us optimize, maintain, and personalize the operating system. One of the most important icons in the Control Panel is the System icon. not only has operating system information but you can configure Devices, Remote Settings, and System Protection in the System icon

Another important component that we need to manipulate and configure is the video adapter. Many users have moved to multiple adapters to make their working environment more customizable. The user may have an application running on one monitor and their email open on another.

If you use Windows 7 on a laptop computer, it is important to properly configure your power options. Configuring the power options on a laptop will allow you to get the most life from your laptop batteries. You can choose among many power options to customize laptops for each of your users.

We'll examine how services operate and how to configure your services to start manually or automatically. We'll also explore how to configure services in the event of a service error.

In this chapter, you will learn to

- ◆ Understand Control Panel
- ◆ Use the System Icon
- ◆ Configure mobile computers
- ◆ Configure services

Configuring Windows 7

Windows 7 includes several utilities for managing various aspects of the operating system configuration. In the following sections, you will learn how to configure your operating system using Control Panel and the Registry Editor.

Let's start with Control Panel and the various utilities included within it.

What's in Control Panel?

Control Panel is a set of GUI utilities that allow you to configure Registry settings without using a Registry editor. The Registry is a database used by the operating system to store configuration information.

Let's take a closer look at the utilities that are available through Control Panel:

Action Center The Action Center has two configurable sections: Security and Maintenance. The Security section allows you to configure four options:

- ◆ Virus Protection, which allows you to install and configure virus protection
- ◆ Windows Update, which allows you to update Windows 7
- ◆ Check For Solutions To Unreported Problems, which allows you to report and check for unreported problems
- ◆ Set Up Backup, which allows you to configure a backup

The Maintenance section allows you to set up a backup. Backups and Windows Update are explained later in this section.

Administrative Tools By clicking this icon, you can access multiple administrative tools that can help you configure and monitor the Windows 7 operating system. These tools include

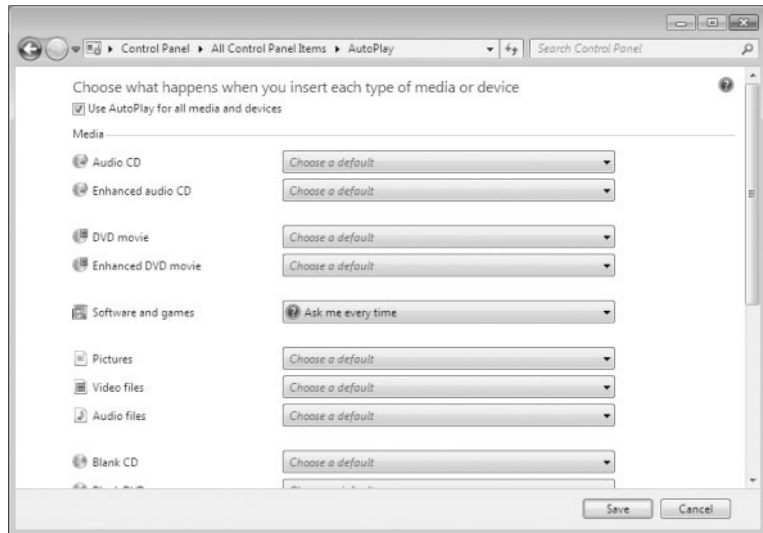
- ◆ Computer Services
- ◆ Computer Management
- ◆ Data Sources (ODBC)
- ◆ Event Viewer
- ◆ iSCSI Initiator
- ◆ Local Security Policy
- ◆ Performance Monitor
- ◆ Print Management
- ◆ Services
- ◆ System Configuration
- ◆ Task Scheduler
- ◆ Windows Firewall with Advanced Security
- ◆ Windows Memory Diagnostics
- ◆ Windows PowerShell Modules

AutoPlay AutoPlay lets you configure media disks that will automatically start when inserted into the Media Player, as shown in Figure 6.1. Each of the media you use has different configuration settings, but the basic choices are as follows:

- ◆ Play Media Using The Windows Media Player
- ◆ Open The Folder To View Files Using Windows Explorer

- ◆ Take No Action
- ◆ Ask Me Every Time

FIGURE 6.1
AutoPlay options



Backup And Restore Backup And Restore allows you to install and configure your backup media. Backups allow a user to make a copy of all important data on their machine in the event of a hardware failure or disaster. Chapter 15, “Maintaining and Optimizing Windows 7,” goes into greater detail about backups.

BitLocker Drive Encryption BitLocker Drive Encryption helps prevent unauthorized users from accessing files stored on the hard drives. The user is able to use the computer as normal but unauthorized users cannot read or use any of their files. Chapter 9, “Managing Security,” discusses BitLocker Drive Encryption.

Color Management Color Management allows you to configure some of the video adapter settings, as shown in Figure 6.2. You can configure the Windows Color System Defaults, ICC Rendering Intent To WCS Gamut Mapping, and Display Calibration, as well as change the system defaults.

Credential Manager You use Credential Manager to store credentials such as usernames and passwords. These usernames and passwords are stored in vaults so that you can easily log on to computers or websites.

There are three credential sections: Windows Credentials, Certificate-Based Credentials, and Generic Credentials. You can add credentials by just clicking the Add Credentials link next to each of the three sections, as shown in Figure 6.3.

Date And Time Click the Date And Time icon to configure the local date and time for your Windows 7 machine. You also have the ability to synchronize your clock with the Internet, as shown in Figure 6.4.

Default Programs Click the Default Programs icon to choose the programs that Windows uses by default. For example, you can set Internet Explorer 8 (IE8) to be the default Internet browser, as shown in Figure 6.5.

FIGURE 6.2
Color Management

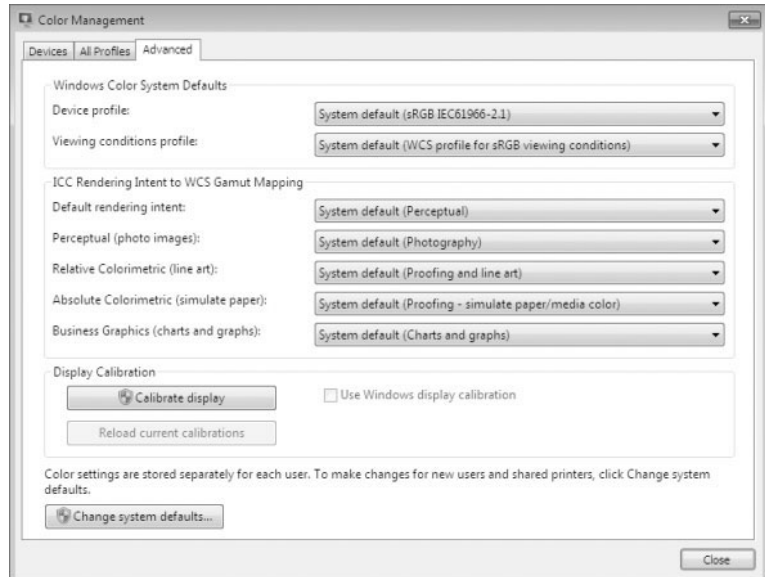
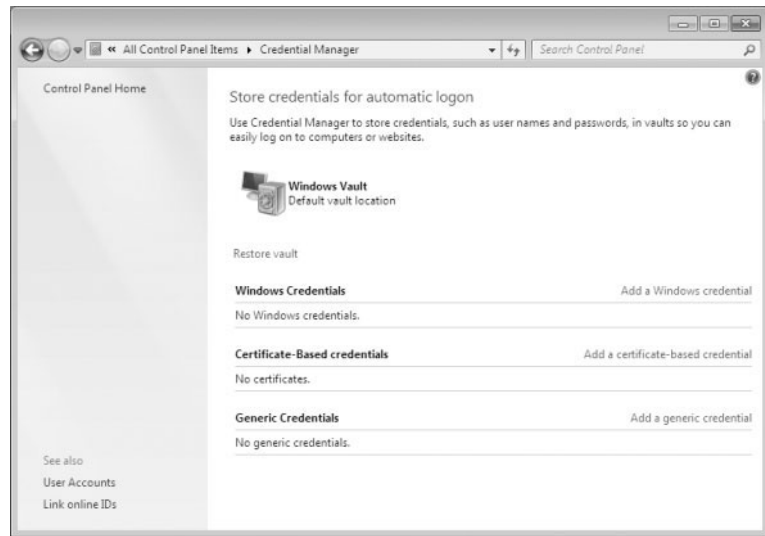


FIGURE 6.3
Credential Manager



Desktop Gadgets Click the Desktop Gadgets icon to set up various gadgets for your Windows 7 Desktop. To learn more about gadgets, refer to Chapter 5, “Managing the Windows 7 Desktop.”

Device Manager Click the Device Manager icon to configure the devices on your Windows 7 machine. You can configure such devices as disk drives, display adapters, DVD/CD-ROM drives, monitors, and network adapters. Chapter 10, “Configuring Hardware and Printing,” gives more details about Device Manager.

FIGURE 6.4
Time synchronization

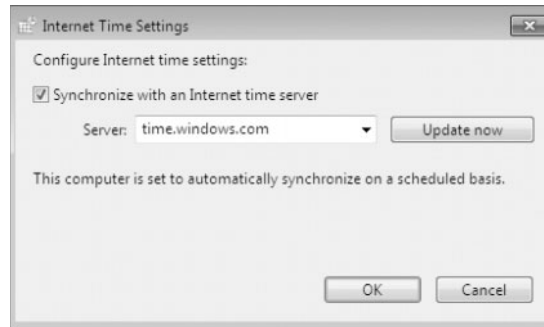
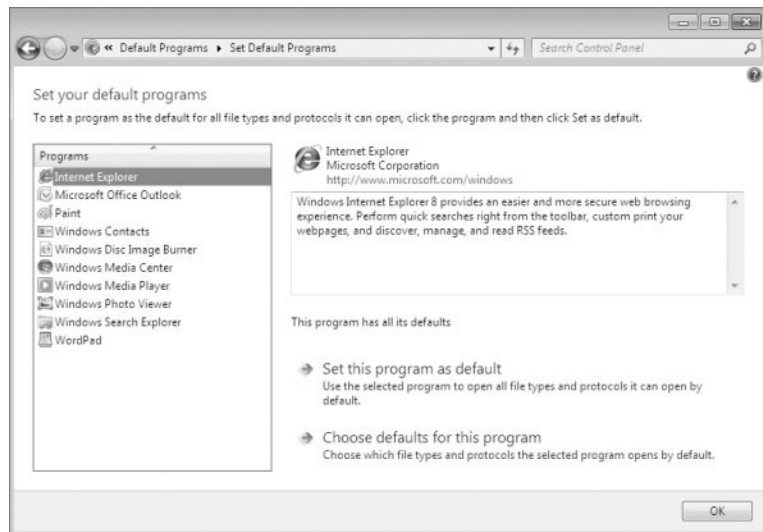


FIGURE 6.5
Setting default programs



Devices And Printers Click the Devices And Printers icon to add or configure the devices on your machine and your printers. Chapter 10, “Configuring Hardware and Printing,” discusses in detail devices and printers.

Display Click the Display icon to configure your display properties, as shown in Figure 6.6. You can change the size of the text and other items on your screen. You also have the ability to change the resolution, calibrate colors, change display settings, adjust ClearType text, and change custom text size.

Ease Of Access Center The Ease Of Access Center enables you to set up your accessibility options. Chapter 5, “Managing the Windows 7 Desktop,” explains in detail the Ease Of Access Center.

Folder Options Click the Folder Options icon to configure how you can view the folders on your Windows 7 machine by default. You can configure how you browse and navigate folders, which files and folders you can view, and how folders are searched, as shown in Figure 6.7.

FIGURE 6.6
Display options

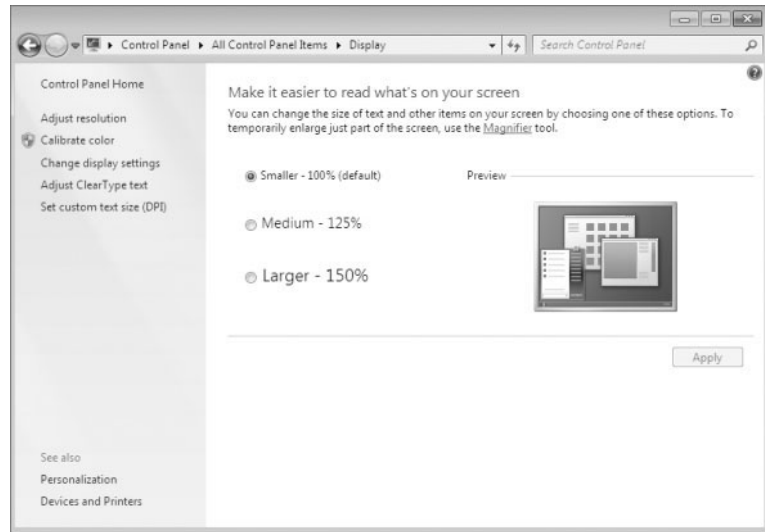
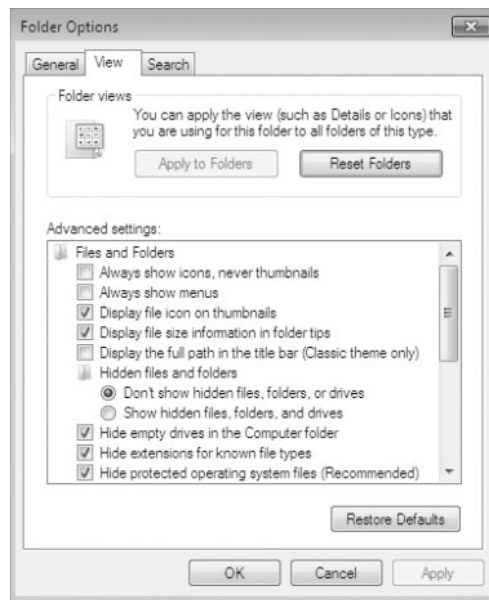


FIGURE 6.7
View Folder options



Fonts Click the Fonts icon to install, preview, delete, show, hide, and configure the fonts that the applications on your Windows 7 operating system can use. get fonts online, adjust ClearType text, find a character, and change font size.

Getting Started The Getting Started icon allows you to learn about and configure your Windows 7 operating system. By clicking this icon, you can do the following:

- ◆ Go online to find out what's new in Windows 7.
- ◆ Personalize Windows.

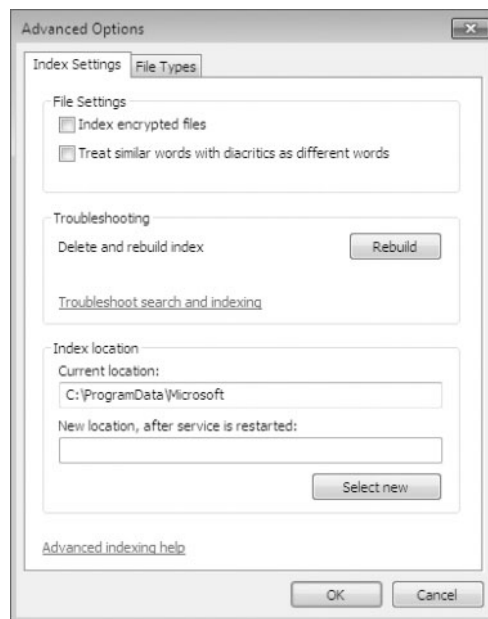
- ◆ Transfer files and settings from another computer.
- ◆ Use a HomeGroup to share with other computers in your home.
- ◆ Choose when to be notified about changes to your computer.
- ◆ Go online to get Windows Live Essentials.
- ◆ Back up your files.
- ◆ Add new users to your computer.
- ◆ Change the size of the text on your screen.

HomeGroup The HomeGroups icon gives you the ability to create and configure your HomeGroup. HomeGroups are small local networks that you can easily configure at home and work.

When you install HomeGroups on your first computer, a password is assigned so that you can connect other computers to this HomeGroup. You can change the password by clicking the HomeGroup icon. Chapter 11, “Configuring Network Connectivity,” discusses HomeGroups in detail.

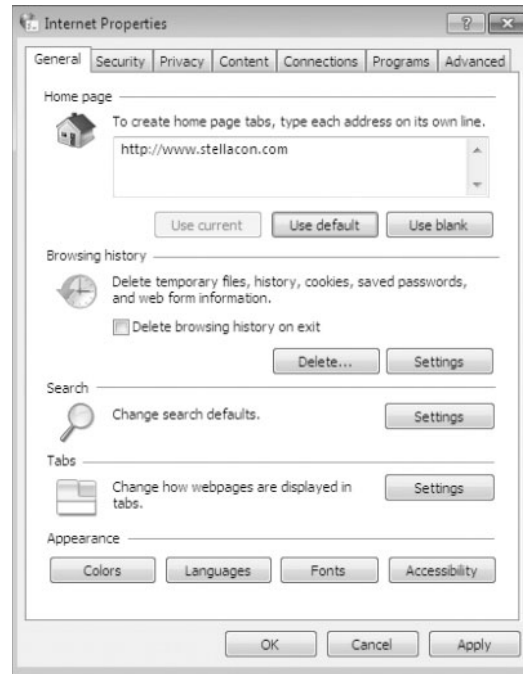
Indexing Options Windows uses the Indexing feature to perform very fast searches of common files on your computer. Index Settings give you the ability to configure which files and applications are indexed, as shown in Figure 6.8.

FIGURE 6.8
The Index Settings tab
of Advanced Options



Internet Properties Click the Internet Properties icon to configure how the Internet will operate, as shown in Figure 6.9. From this icon you can configure your Home page, Browsing history, Tabs, Security, Privacy, Content, Connections, and Programs. Chapter 13, “Configuring Internet Explorer,” discusses Internet Explorer 8 in detail.

FIGURE 6.9
Internet Properties



Keyboard In Keyboard Properties, you configure how the keyboard will react when used. You can set the character repeat speed (how fast the keyboard will repeat what you are typing) and the cursor speed. You can also configure the keyboard drivers in this properties window.

Location And Other Sensors Sensors are either software or hardware devices that pick up information from the surrounding area for your computer. Windows 7 supports both hardware and software sensors.

Examples of hardware sensors are motion detectors, and an example of a software sensor is your computer reacting from a network packet. Windows 7 supports the following list of the sensors:

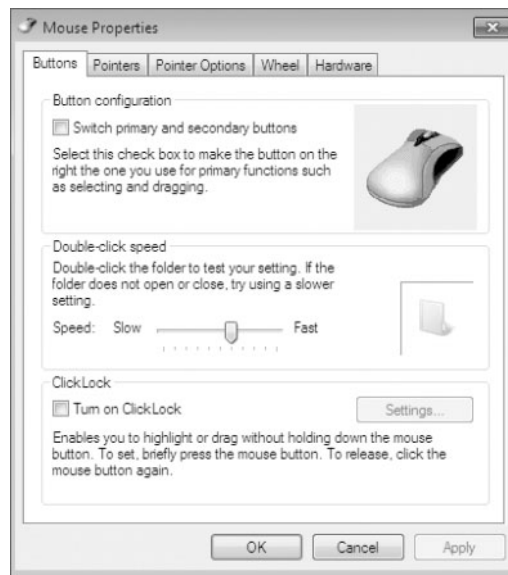
- ◆ GPS
- ◆ Accelerometer
- ◆ Proximity
- ◆ Light
- ◆ RFID (radio frequency identification)
- ◆ Compass
- ◆ Camera
- ◆ Microphone
- ◆ Temperature

- ◆ Moisture
- ◆ Motion detector
- ◆ Traffic
- ◆ Weather station

Mail Setting the Mail properties allows you to set up your client side mail settings. In the Mail properties window, you can set up different user profiles (mailboxes) and specify which local mail servers or Internet mail servers they connect to.

Mouse The Mouse icon gives you the ability to configure how the mouse will operate, as shown in Figure 6.10. You can configure the buttons, click speed, clicklock, pointer type, pointer options, center wheel, and hardware properties.

FIGURE 6.10
Configuring the mouse
properties



Network And Sharing Center The Network And Sharing Center allows you to configure your Windows 7 machine to connect to a local network or the Internet. You can configure TCP/IP, set up a new network, connect to a network, choose a HomeGroup, and configure the network adapter. See Chapter 11, “Configuring Network Connectivity,” gives more details about the Network And Sharing Center.

Notification Area The Notification Area is the icon in the lower-right hand window of Windows 7 (next to the time) taskbar. The Notification Area icon in Control Panel allows you to configure which icons appear on the Taskbar and which notifications are shown.

Parental Controls Parental Controls allow you to manage how children can use your Windows 7 computer. With Parental Controls, you can set the hours that children can use the computer, the programs that they can access, and the type of games that they can play.

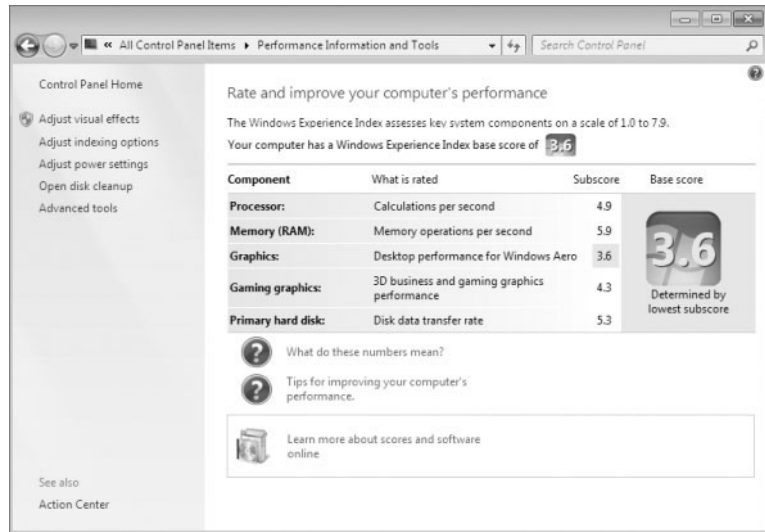
When children try to access an application or game that they are not allowed to use, a notification will let them know that the application or game is restricted. The child can click a link

that will then ask for access to the application or game, and the parent can accept or decline the request. Chapter 9, “Managing Security,” discusses Parental Controls in detail.

Performance Information And Tools The Performance Information and Tools icon gives you the ability to run a Windows Experience Index measurement, as shown in Figure 6.11. The Windows Experience Index measures the performance of the computer system.

The results will be issued as a base score. The higher the base score, the better your machine will perform. The Performance Information and Tools icon also shows you how you can improve the performance of your machine.

FIGURE 6.11
Performance
Information And Tools



Personalization Personalization allows you to set up your desktop environment. We discussed Personalization in Chapter 5, “Managing the Windows 7 Desktop,” gives more details about the Personalization icon.

Phone And Modem The Phone And Modem properties window allows you to set up your local dialing properties and modem options, as shown in Figure 6.12. You can specify your dialing location, modem properties, and telephone providers.

Power Options Power plans allow a user to maximize their Windows 7 machine’s performance and/or conserve energy. You have the ability to enter your own power restrictions to customize your machine. Power options are important settings when dealing with laptops. Because many users of laptops use batteries, power options allow you to get the most time from their batteries. There is more information later in this chapter about Power management.

Programs And Features The Programs and Features icon is the old Add/Remove Programs icon in Windows XP. The Programs and Features icon allows you to uninstall, change, or repair programs and features, as shown in Figure 6.13.

Programs And Features also allows you to choose which Windows 7 features you want installed on your machine, as shown in Figure 6.14. Some of the features that you can enable are games, Indexing Services, Telnet Client, and Telnet Server.

FIGURE 6.12
Phone And Modem
properties window

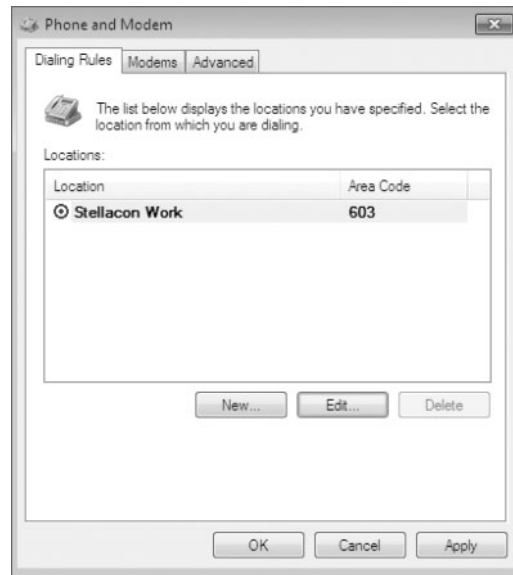
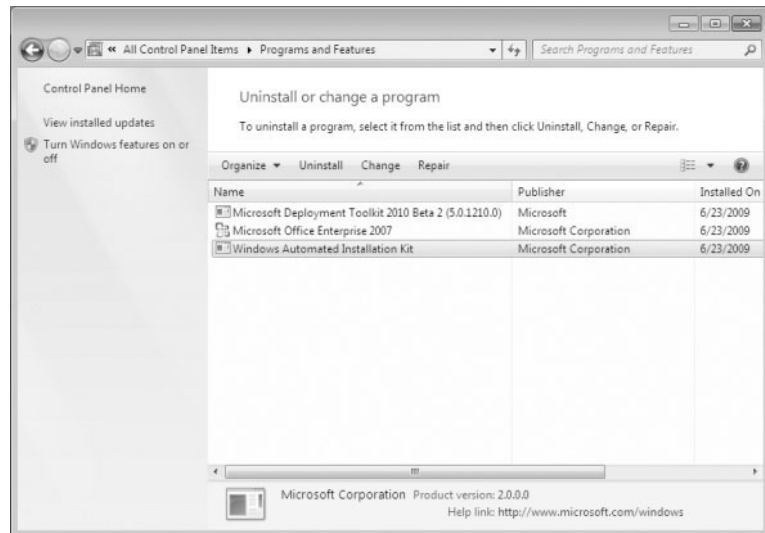


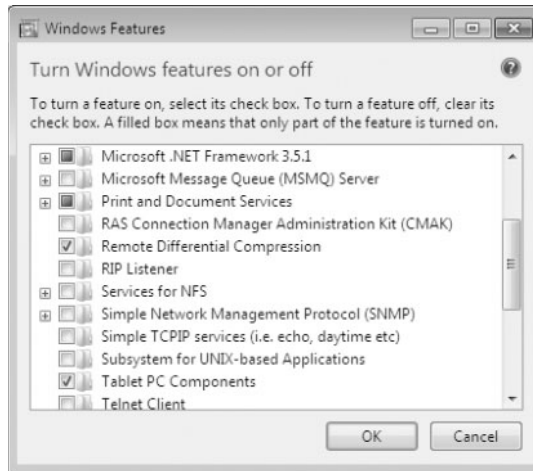
FIGURE 6.13
Programs and
Features Icon



Recovery The Recovery icon allows a user or administrator to recover the Windows 7 system to a previously captured restore point. System Restore is one of the first recovery options when your Windows 7 system experiences problems. Chapter 15 discusses Recovery in detail.

Region And Language The Region and Language icon allows you to configure your local regional settings. Chapter 5, “Managing the Desktop,” discusses in detail the Region and Language icon.

FIGURE 6.14
Features Icon



RemoteApp And Desktop Connections Click the RemoteApp And Desktop Connections icon to access programs and desktops on your network. To connect to these resources (Remote Applications and Desktops), you must have the proper permissions to access these resources.

The RemoteApp and Desktop Connections allows you to connect to either a remote computer or a virtual computer. To create a new connection, use the Set Up A New Connection Wizard included with the RemoteApp And Desktop Connections icon.

Sound The Sound icon allows you to configure your machine's audio. You can configure output (speakers and audio drivers) and you can configure your input devices (microphones).

Speech Recognition The Speech Recognition icon allows you to configure your speech properties. Speech Recognition allows you to speak into the computer and that speech is displayed on the system. Many programs like Microsoft Office can type in the words as you speak them into the system. In the Speech Recognition icon, you can complete the following items:

- ◆ Start Speech Recognition.
- ◆ Set Up Microphone.
- ◆ Take Speech Tutorials.
- ◆ Train Your Computer To Better Understand You.
- ◆ Open The Speech Reference Card.

Sync Center The Sync Center allows you to configure synchronization between the Windows 7 machine and a network server. The Sync Center also enables you to see when the synchronization occurred, if the synchronization was successful, and if there were any errors.

System The System icon is one of the most important icons in Control Panel. The System icon allows you to view which operating system your machine is using, check system resources (Processor, RAM), change the computer name/domain/workgroup, and activate your Windows 7. From the System icon you can also configure the following:

- ◆ Device Manager
- ◆ Remote Settings

- ◆ System Protection
- ◆ Advanced Settings

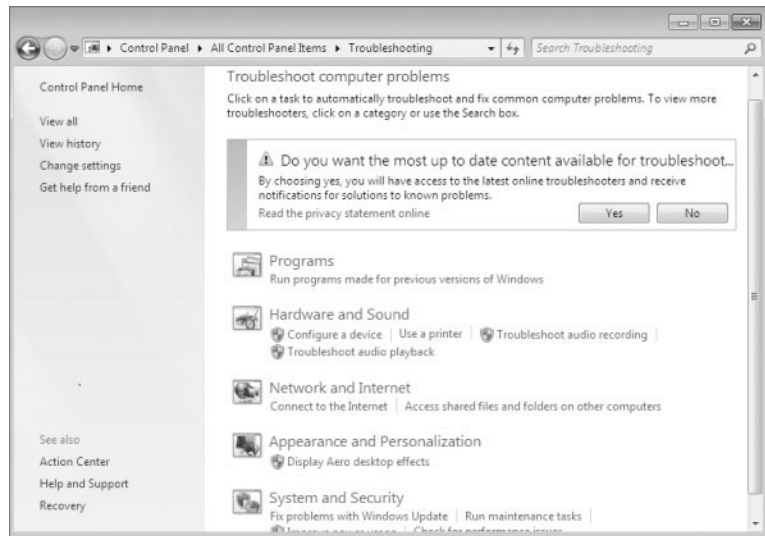
We'll discuss the System utility in detail in the following section, "Using the System Utility."

Taskbar And Start Menu The Taskbar and Start Menu icon allows you to configure how the Taskbar, Start Menu, and Toolbars will operate. Chapter 5, "Managing the Windows 7 Desktop," discusses in detail the Taskbar and Start Menu icon.

Troubleshooting The Troubleshooting utility in Control Panel allows you to troubleshoot common Windows 7 problems, as shown in Figure 6.15. You can troubleshoot the following:

- ◆ Programs
- ◆ Hardware And Sound
- ◆ Network And Internet
- ◆ Appearance And Personalization
- ◆ System And Security

FIGURE 6.15
Troubleshooting options



We discuss troubleshooting common Windows 7 issues in detail in Chapter 15.

User Accounts The User Accounts icon allows you to create and modify user accounts. In the User Account icon, you can do the following:

- ◆ Change user passwords.
- ◆ Remove passwords.

- ◆ Change the account picture.
- ◆ Change the account name.
- ◆ Change the account type.
- ◆ Manage accounts.
- ◆ Change User Account Control settings.

We discuss user accounts in detail in Chapter 8, “Configuring Users and Groups.”

Windows CardSpace Windows CardSpace is a new way for you to interact with websites and online services. Windows CardSpace allows you to replace the username and passwords that you currently use with online services. Using Windows CardSpace allows you to do the following:

- ◆ Review the identity of the site.
- ◆ Manage your information by using information cards.
- ◆ Review card information before you send it to a site.
- ◆ Allow sites to request information from you.

Windows Defender Windows Defender is a built-in Windows 7 Spyware protector. It is included free with the operating system and starts automatically protecting your system after you turn it on. Windows Defender can operate in the following two modes:

Real-Time Protection Real-Time Protection allows Windows Defender to run in the background and protect your system as you are working live on the Internet or network.

Scanning Options The Scanning Options mode allows you to run a system scan at any time to check for Spyware. This mode does not require the Windows Defender to always be running.

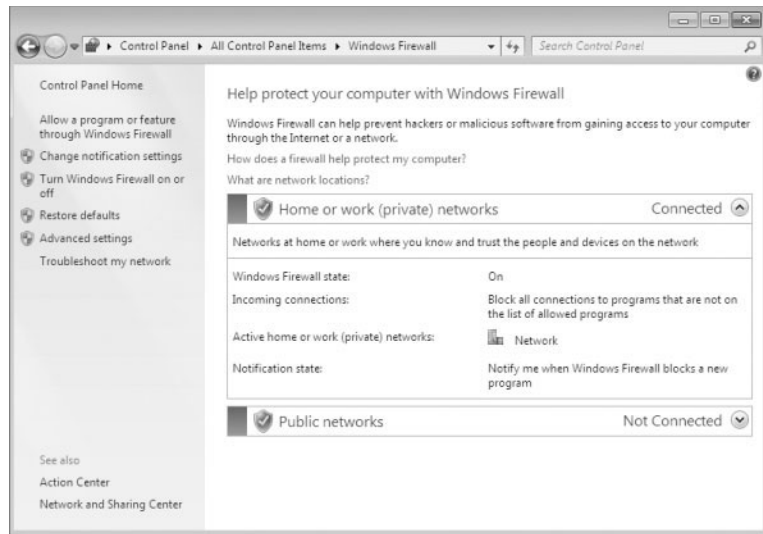
Windows Firewall Windows Firewall, as shown in Figure 6.16, helps prevent unauthorized users or hackers from accessing your Windows 7 machine from the Internet or the local network. Chapter 9, “Managing Security,” explains in detail the Windows Firewall.

Windows Update Windows Update allows you to configure how the Windows 7 operating system receives updates from Microsoft’s website. Chapter 2, “Installing Windows 7,” explains Windows Update.

Perform the following steps to install the Telnet client on the Windows 7 operating system:

1. Open the Programs And Features utility by clicking Start > Control Panel > Programs And Features.
2. Click the Turn Windows Features On Or Off link in the upper-left corner.
3. Scroll down the features list and check the Telnet Client check box.
4. Click OK.

FIGURE 6.16
Windows Firewall



Real World Scenario

USING TELNET

As an IT manager, my job did not just consist of working on Windows machines. It was almost my responsibility to work on routers. This is why it is important to also have an understanding of routers.

When working with most routers, you can use the Telnet client to connect to the router. You can configure the router to operate the way your organization needs.

In the previous section, we talked about the Windows Firewall. We do not recommend that you use the Windows Firewall as your main line of defense against hackers. You should purchase a good router and firewall to complete this task. Knowing how to configure this router using the Telnet client will help you accomplish your networking needs.

It is fine to use the Windows Firewall on all the clients as an added line of defense, but do not make it your main defense.

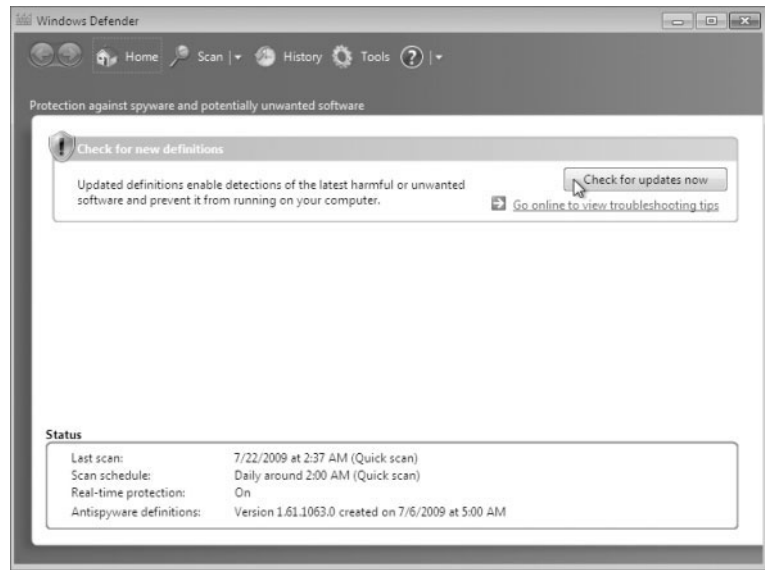
Perform the following steps to run Performance Information And Tools to receive your baseline performance score:

1. Open the Performance Information And Tools utility by clicking Start > Control Panel > Performance Information And Tools.
2. If the computer has not been rated yet, click the Rate This Computer button. If the computer has a rating, click the Update My Score link.
3. The computer will take a few minutes and test your hardware. After your score appears, close the Performance Information And Tools window.

Now let's take a look at how to work with the Windows Defender. Perform the following steps to configure the Windows Defender:

1. Open Windows Defender by clicking Start > Control Panel > Windows Defender.
2. Click the Check For Updates Now button, as shown in Figure 6.17.

FIGURE 6.17
Windows Defender



3. The Checking For Updates screen appears. This process may take a few minutes. After the update is complete, a message should state the status of the machine. If no unwanted software is detected, close Windows Defender. If unwanted software is detected, remove the unwanted software and then close Windows Defender.

Now that we have looked at all the icons in Control Panel, let's now look at the System utility in greater detail.

Understanding the System Icon

The System utility in Control Panel is a useful set of utilities and tasks that allow you to configure remote access, system devices, system protection, and the computer name, just to name a few.

Let's look at the tasks that can be configured in Control Panel:

Windows Edition The Windows Edition section shows you which edition of Windows the machine is currently using. The Windows Edition section also shows whether service packs are installed.

System The System section shows information about the system hardware. The System sections also shows:

- ◆ Rating
- ◆ Processor

- ◆ Installed Memory (RAM)
- ◆ System Type
- ◆ Pen and Touch

Computer Name/Domain Changes In the Computer Name, Domain, and Workgroup setting section you can change the name of the computer system and also change the workgroup or domain, as shown in Figure 6.18.

FIGURE 6.18
Change Computer Name,
Domain, or Workgroup



Windows Activation The Windows Activation section allows you to activate your Windows 7 operating system. The Windows Activation section also allows you to change your product key before activating.

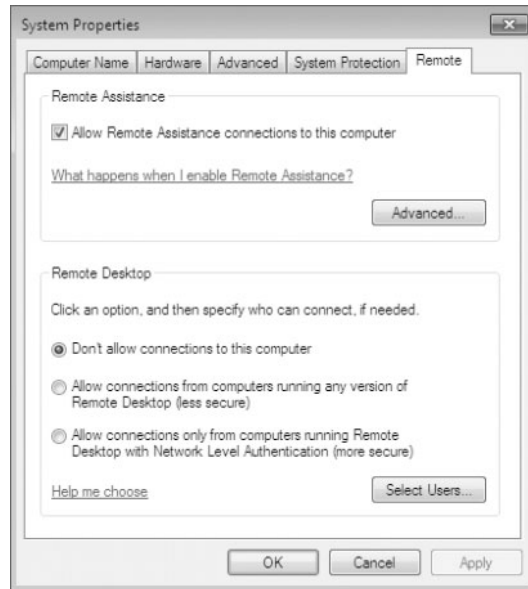
Remote Settings The Remote Settings section allows you to set the Remote Assistance and Remote Desktop settings for the Windows 7 system, as shown in Figure 6.19. Windows Remote Assistance allows you to connect to a machine and control the mouse and keyboard while the user is on with you. This option can be enabled or disabled.

Remote Desktop allows you to have your own session on the Windows 7 operating system. While you are logged on to the Windows 7 operating system through Remote Desktop, the user of the machine can't view the session. You can choose from the following three Remote Desktop options:

Don't Allow Connections From This Machine Choosing this option prevents anyone from connecting to this machine through Remote Desktop.

Allow Connections From Computers Running Any Version Of Remote Desktop (Less Secure) This setting allows any computer running Remote Desktop to connect to this Windows 7 machine. These machines do not need to use network-level authentication, and that's makes this connection type less secure.

FIGURE 6.19
Remote Settings Screen



Allow Connections Only From Computers Running Remote Desktop With Network Level Authentication (More Secure) Network-level authentication is a new method used for Remote Desktop (Windows Vista and higher). It allows Remote Desktop users to connect to the Windows 7 operating system securely.

You also have the ability in Remote Desktop to specify which users have access to the Windows 7 machine through the use of Remote Desktop.

System Protection The System Protection section allows you to configure restore points and recoverability for the Windows 7 operating system, as shown in Figure 6.20. You can also manage disk space and manage all of your restore points in the System Protection section.

Advanced System Settings The Advanced System Settings section allows you to set up such items as visual effects, processor scheduling, memory usage, virtual memory, desktop settings, system startup, and recoverability, as shown in Figure 6.21.

There are three main sections within the Advanced System Settings section.

Performance The Performance section allows you to configure the Visual Effects, the virtual memory, processor scheduling, and data execution prevention for the Windows 7 operating system.

The virtual memory is a section of the hard drive that is used by the system and RAM. Think of RAM as a pitcher of water. As the water fills up the pitcher, the pitcher fills. Once full, the water would overflow. The virtual memory is the overflow for RAM. When RAM fills up, the oldest data in the RAM gets put into the virtual memory. This way, the system does not need to look at an entire hard drive for that data. It finds it in the virtual memory.

The Data Execution Prevention section helps protect against damage from viruses and other security threats.

FIGURE 6.20
System Protection
Screen

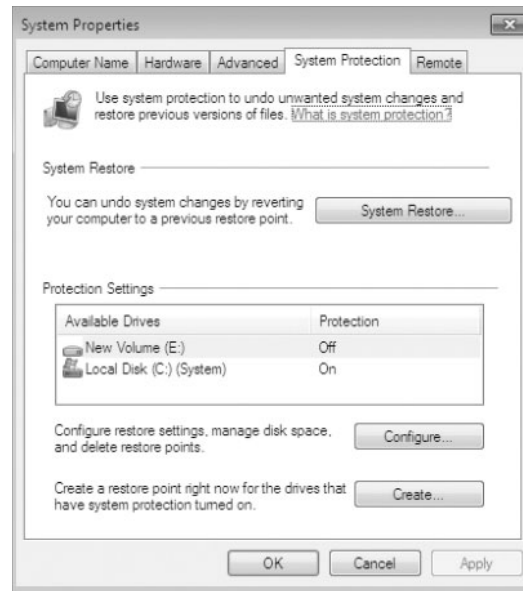
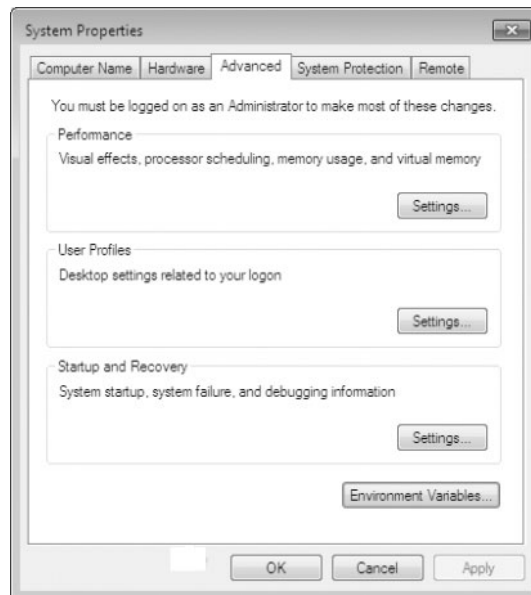


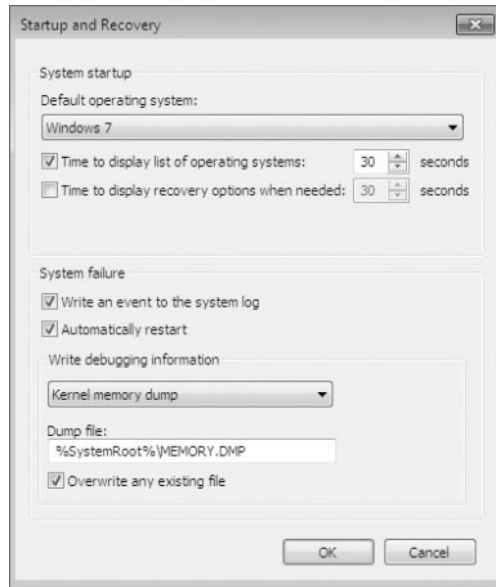
FIGURE 6.21
Advanced System
Settings



User Profiles The User Profiles section allows you to copy, delete, or move a user's desktop profile to another location or user account. Chapter 5 discusses user profiles in detail.

Startup And Recovery The Startup And Recovery section, as shown in Figure 6.22, allows you to configure which operating system will be booted by default (important for dual-booting machines) and what should happen when the system gets a startup error.

FIGURE 6.22
Startup And Recovery
options



You can also configure Device Manager from the System utility. Chapter 10 discusses Device Manager in detail.

Let's now take a look at configuring some of the options using the System utility. Perform the following steps to change the computer name:

1. Open the System utility by clicking Start > Control Panel > System.
2. In the resulting window, in the Computer Name, Domain and Workgroup section, click the Change Settings link.
3. Click the Change button in the To Rename This Computer section.
4. In the Computer Name field, enter a new name for your computer. Click OK.
5. A dialog box asking to reboot the machine appears. Click OK.
6. Click Close. Click the Restart Now button.

Now that we have renamed the computer, let's take a look at how to configure performance options.

Perform the following steps to manipulate your system's virtual memory:

1. Open the System utility by clicking Start > Control Panel > System.
2. In the left-hand side, click the Advanced System Settings link.
3. In the Performance section, click the Settings button.
4. When the Performance screen appears, click the Advanced tab.
5. In the Virtual Memory section, click the Change button.
6. Uncheck the check box that states Automatically Manage Paging File Size For All Drives check box.

7. Click the Custom Size radio button.
8. Set the Minimum and Maximum settings to one and half times RAM. For example, if your RAM is 1024 MB, change both settings to 1536 MB.
9. Click the Set button.
10. Click OK. Click OK at the Performance screen.
11. Close the System Properties window.

VIRTUAL MEMORY

Microsoft Windows 7 handles the virtual memory requirements by default, but I would recommend increasing the virtual memory on your machine if hard drive space is available. I use the rule of thumb of one and a half to two times the size of RAM. You want to make sure that the virtual memory is at least the same size as RAM as a minimum.

Now let's see how to set up some recoverability options for your operating system. Perform the following steps to create a restore point:

1. Open the System utility by clicking Start > Control Panel > System.
2. In the left-hand side, click the System Protection link.
3. When the System Protection screen appears, click the Create button in the Create A Restore Point Right Now section.
4. A dialog box asks you to type in a description to help identify which restore point it is. Type in today's date and click the Create button.
5. After it finishes, a dialog box stating that the restore was created successfully appears. Click the Close button.
6. Click the System Restore button.
7. At the System Restore screen, click Next.

At the "Restore your computer to the state it was in before the selected event" screen, you should see the restore point that you just created.

8. If the restore that you created is there, click Cancel. If the restore is not there, repeat steps 2 through 5.

Another task that we will complete is allowing Remote Desktop connections. Perform the following steps to enable Remote Desktop connections:

1. Open the System utility by clicking Start > Control Panel > System.
2. In the left-hand side, click the Remote Settings link.
3. In the Remote Desktop section, click the Allow Connections From Computers Running Any Version Of Remote Desktop (Less Secure) radio button.
4. Make sure that the Allow Remote Assistance Connections To This Computer check box is selected.

5. Click OK.
6. Close the System Properties window.

Another way to configure options within the Windows 7 operating system is to configure the settings directly in the Registry. In the next section you'll learn how to use the Registry Editor.

Using the Registry Editor

You use the Registry Editor program to edit the Registry. This utility is designed for advanced configuration of the system. Usually, when you make changes to your configuration, you use other utilities, such as those available in Control Panel, which we discussed in the previous section.

ADMINISTERING THE REGISTRY

Only experienced administrators should use the Registry Editor. It is intended for making configuration changes that can be made directly through the Registry only. For example, you might edit the Registry to specify an alternate location for a print spool folder. Improper changes to the Registry can cause the computer to fail to boot. Use the Registry Editor with extreme caution.

Windows 7 uses the REGEDIT program as the primary utility for Registry editing in Windows 7. This program supports full editing of the Registry. To use REGEDIT, select Start and type **REGEDIT** in the Search dialog box.

The Registry is organized in a hierarchical tree format of keys and subkeys that represent logical areas of computer configuration. By default, when you open the Registry Editor, you see five Registry key listings, as shown in Figure 6.23 and described in Table 6.1.

FIGURE 6.23
The Registry Editor window

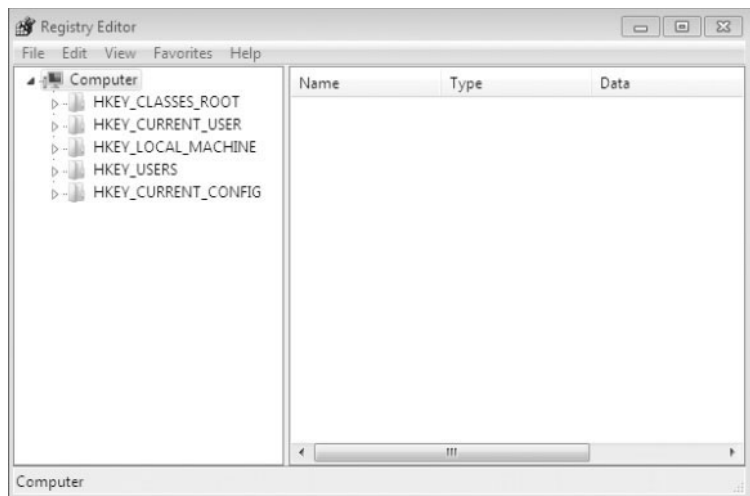


TABLE 6.1: Registry Keys

REGISTRY KEY	DESCRIPTION
HKEY_CLASSES_ROOT	Configuration information that Windows Explorer uses to properly associate file types with applications.
HKEY_CURRENT_USER	Configuration information for the user who is currently logged on to the computer. This key is a subkey of the HKEY_USERS key.
HKEY_LOCAL_MACHINE	Computer hardware configuration information. This computer configuration is used regardless of the user who is logged on.
HKEY_USERS	Configuration information for all users of the computer.
HKEY_CURRENT_CONFIG	Configuration of the hardware profile that is used during system startup.



Real World Scenario

USING THE REGISTRY EDITORS

As IT Manager we have used Registry Editor many times in our career. One change that I like to make to my servers is the **ShutdownWithoutLogon** entry.

If you start your Registry Editor and do a search on **ShutdownW** (it's the only one, so you do not need to type it out completely), a value of 0 will be shown. We change this value to 1. Now what does this do?

When you log on to a server, by default at the logon screen, the Shutdown button is grayed out. The reason this is set this way by default is that you might not want just anyone shutting down the server. So you want them to log in before shutting down.

If our servers are locked in a secure computer room, we change the Shutdown button so that it is active. We do this so that if we need to use the Last Known Good option to recover the Registry, we can shut down at the logon screen.

Another configuration that you can set is the display devices. Let's take a look at how to configure them.

Managing Display Devices

When we configure display devices, most users think we are speaking of just the monitors. But the display device is attached to a video adapter and that is actually what we are configuring.

A video adapter is the device that outputs the display to your monitor. You install a video adapter in the same way that you install other hardware. If it is a Plug and Play device, all you need to do is shut down your computer, add the video adapter, and turn on your computer. Windows 7 automatically recognizes the new device.

You can configure several options for your video adapters, and if you have multiple monitors with their own video adapters, you can configure multiple-display support. The following sections describe video adapter configuration and how to configure your computer to support multiple monitors.

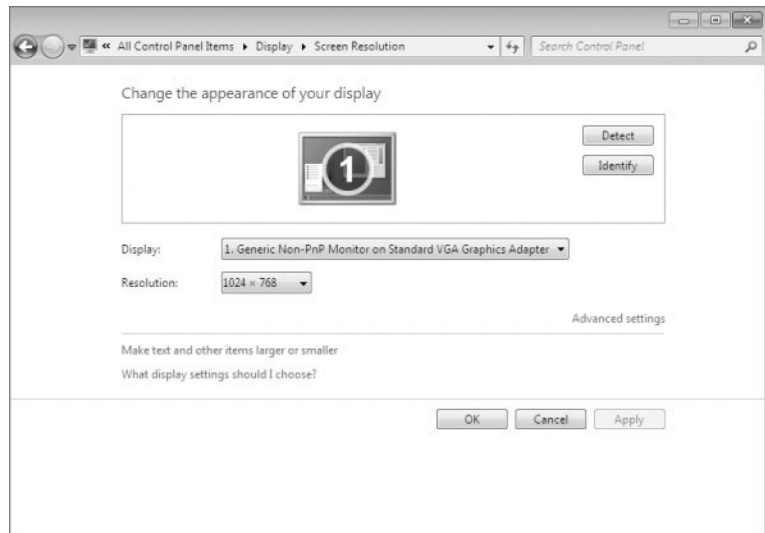
VIDEO ADAPTER INSTALLATION

You install video adapters as you would any Plug and Play or non-Plug and Play device. We discussed how to install Plug and Play and non-Plug and Play devices earlier in the chapter.

Configuring Video Adapters

The options for video settings are on the Monitor tab of the Display Settings dialog box, as shown in Figure 6.24. To access this dialog box, select Control Panel > Appearance and Personalization > Personalization > Display Settings. Alternatively, you could right-click an empty area on your Desktop, select Personalize from the pop-up menu, and then select Display.

FIGURE 6.24
The Monitor tab of the Display Settings dialog box



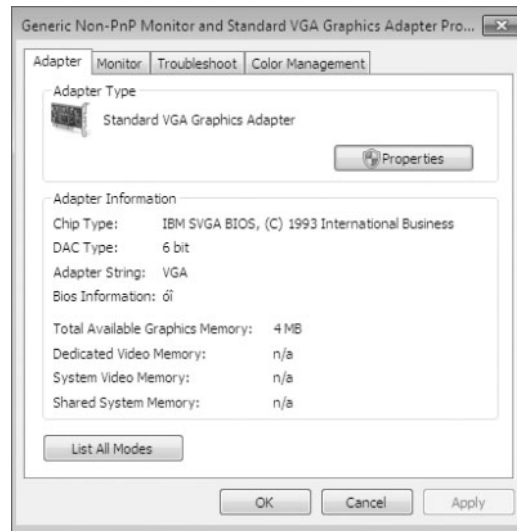
Within the Display properties you can configure the resolution, calibrate the colors, change display settings, adjust ClearType text, and set the custom DPI.

To configure advanced settings for your video adapter, click the Advanced button in the lower-right corner of the Display properties. This button opens the Properties dialog box for the display monitor, as shown in Figure 6.25.

You'll see the following four tabs with options for your video adapter and monitor:

Adapter Allows you to view and configure the properties of your video adapter. In the Adapter section, there is a Properties button. The Properties button allows you to configure the graphic adapter properties, including drivers.

FIGURE 6.25
The Properties dialog
box for a display
monitor



Monitor Allows you to view and configure the properties of your monitor, including the refresh frequency (how often the screen is redrawn) and colors shown (High Color 16 or True Color 32).

LOWER REFRESH FREQUENCY

A lower refresh frequency setting can cause your screen to flicker. Setting the refresh frequency too high can damage some hardware.

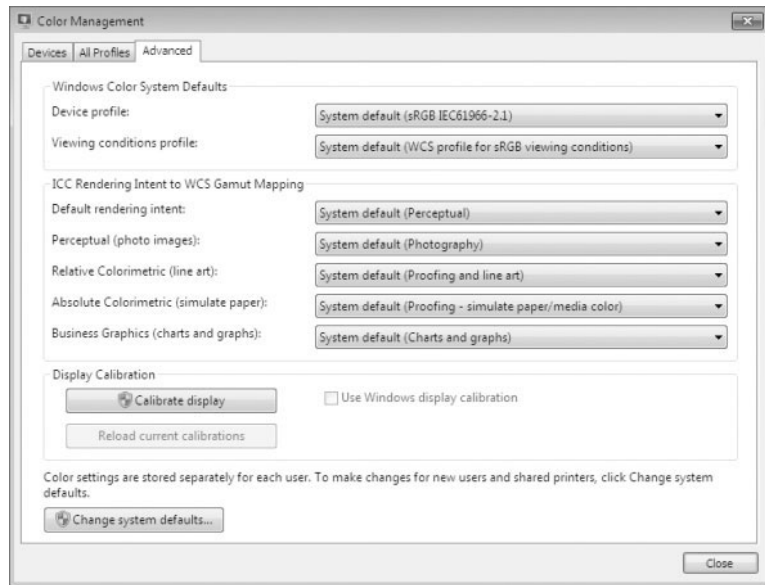
Troubleshooter Allows you to configure how Windows 7 uses your graphics hardware. For example, you can configure hardware acceleration settings, as shown in Figure 6.26.

FIGURE 6.26
Display Adapter
Troubleshooter



Color Management Allows you to select color profiles (the colors that are displayed on your monitor), calibrate your display, and change system setting default, as shown in Figure 6.27.

FIGURE 6.27
Color Management,
Advanced tab



VIDEO ADAPTER SETTINGS

Usually, the video adapter is configured for typical use. Be careful if you change these settings because improper settings may cause your display to be unreadable.

Perform the followings steps for viewing and documenting your video adapter settings:

1. Right-click an empty area on the Desktop, choose Personalize, and select Display Settings.
2. Click the Change Display Settings link.
3. Click the Advanced Settings link.
4. Click the Monitor tab. Make a note of your current settings.
5. Click the Troubleshoot tab. Make a note of your current settings.
6. Click OK to close the monitor Properties dialog box.
7. Click OK to close the Display Settings dialog box.

SETTING THE VIDEO'S RESOLUTION, COLOR SELECTION, AND REFRESH RATE

Depending on your video adapter, you can configure a monitor's resolution, color selection, and refresh rate. Resolution specifies how densely packed the pixels are. The more pixels or dots per inch (dpi), the clearer is the image. The Super Video Graphics Adapter

(SVGA) standard is 1024/768, but many current models can display higher resolution, such as 1600/1200. The color selection specifies how many colors are supported by your video adapter. Refresh rate indicates how many times per second the screen is refreshed (redrawn). To avoid flickering, this rate should be set to at least 72 Hz.

Certain applications require specific configurations based on the graphics used. If you run across an application that requires a specific resolution, color selection, or refresh rate, or if a user makes a request based on personal preferences, you can then easily configure the options that are supported by the video adapter.

Using Multiple-Display Support

Windows 7 allows you to extend your Desktop across multiple monitors. This means you can spread your applications across multiple monitors.

Using multiple monitors are becoming a more common practice in the corporate environment. Many programmers use multiple monitors while coding, and many like to have multiple monitors so that they can work and monitor email at the same time.

SETTING UP MULTIPLE-DISPLAY SUPPORT

To set up multiple-display support, you must have a video adapter installed that supports multiple monitors or a separate video adapter installed for each monitor.

If your computer has the video adapter built into the system board, you should install Windows 7 before you install the second video adapter because Windows 7 will disable the video adapter that is built into the system board if it detects a second video adapter. When you add a second video adapter after Windows 7 is installed, it automatically becomes the primary video adapter.

Perform the followings steps to configure multiple-display support:

1. Turn off your computer and install the new video adapters, if needed. Plug your monitors into the video adapters and turn on your computer. Assuming that the adapters are Plug and Play-compatible, Windows 7 automatically recognizes your new adapters and load the correct drivers.
2. Open the Display Settings dialog box (right-click an empty area on your Desktop, select Personalize, and click Display Settings). You should see an icon for each of the monitors.
3. Click the number of the monitor that will act as your additional display. Then select the Extend the Desktop Onto This Monitor check box. Repeat this step for each additional monitor you want to configure. You can arrange the order in which the displays are arranged by dragging and dropping the monitor icons in the Monitor tab of the Display Settings dialog box.
4. When you finish configuring the monitors, click OK to close the dialog box.

TROUBLESHOOTING MULTIPLE-DISPLAY SUPPORT

If you are having problems with multiple-display support, use the following troubleshooting guidelines:

The Extend The Desktop Onto This Monitor option isn't available. If the Monitor tab of the Display Settings dialog box doesn't give you the option Extend The Desktop Onto This

Monitor, confirm that your secondary adapter is supported for multiple-display support. Confirm that you have the most current drivers (that are Windows 7–compliant and support dual-mode capabilities) loaded. Confirm that Windows 7 is able to detect the secondary video adapter. Try selecting the secondary adapter rather than the primary adapter in the Display Settings dialog box.

No output appears on the secondary display. Confirm that your secondary adapter is supported for multiple-display support, especially if you are using a built-in motherboard video adapter. Confirm that the correct video driver has been installed for the secondary display. Restart the computer to see if the secondary video driver is initialized. Check the status of the video adapter in Device Manager. Try switching the order of the video adapters in the computer’s slots. See if the system will recognize the device as the primary display.

An application is not properly displayed. Disable the secondary display to determine if the problem is specific to multiple-display support. Run the application on the primary display. If you are running MS-DOS applications, try running the application in full-screen mode. For Windows applications, try running the application in a maximized window.

Now that we have configured Control Panel and the display adapters, let’s look at how to configure your power options for mobile computers.

Power Management for Mobile Computer Hardware

Windows 7 includes several features that are particularly useful for laptop computers. For example, through Power Options in Control Panel, you can select a power plan and enable power-management features with Windows 7.

POWER OPTIONS

To see many of these power options, you must be using Windows 7 on a laptop computer. If you are running Windows 7 on a desktop, you will see many but not all of the following features.

Recognizing the Improvements to Power Management

Windows 7 builds upon the power-management features that were introduced with Windows XP with some the following enhancements:

- ◆ Battery meter, which provides a notification icon in the system tray that details the computer’s battery power
- ◆ Power plans, which are collections of hardware and software settings optimized for a specific function
- ◆ Sleep power state, which combines the speed of standby with the features of hibernate mode
- ◆ ReadyDrive, which provides faster booting and resume times when used in conjunction with ReadyDrive-capable hard drives

POWER ENHANCEMENTS

These power enhancements were present with Windows Vista but we listed them here because we understand that many users and administrators did not switch to Windows Vista.

After looking at some of the features of Windows 7 Power Management, let's look at managing the various power options.

Managing Power States

In Windows 7, the Advanced Configuration Power Interface (ACPI) specifies the following different levels of power states:

- ◆ Fully active PC
- ◆ Sleep
- ◆ Hibernation
- ◆ Complete shutdown of PC

The sleep power state is a new power state introduced with Windows 7 that combines the features of hibernate and standby. When a computer enters the sleep power state, data including window locations and running applications is saved to the hard disk, and that session is available within seconds when the computer wakes. This allows the computer to be put into a power-saving state when not in use but allows quick access to the in-process user session, thus enabling the user to begin working more quickly than if the computer were shut down or put into hibernation.

Hibernation falls short of a complete shutdown of the computer. With hibernation, the computer saves all of your Desktop state as well as any open files. To use the computer again, press the power button. The computer should start more quickly than from a complete shutdown because it does not have to go through the complete startup process. You will have to again log on to the computer. Similar to when the computer is put into Sleep mode, all the documents that were open when the computer went into hibernation are still available. With hibernation you can easily resume work where you left off. You can configure your computer to hibernate through Power Options or by choosing Start, and then clicking the arrow and selecting Hibernate from the drop-down menu. This option appears only if hibernation has been enabled through Power Options.

SLEEP MODE

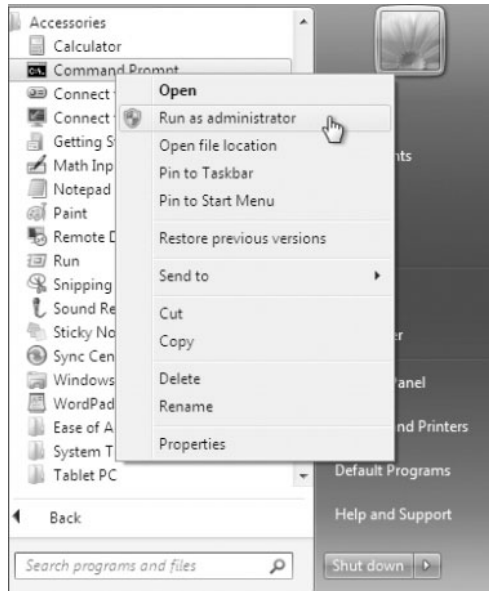
Unless you want to completely shut down the computer, configuring the computer to enter Sleep mode is typically the best power-saving option. You might need to upgrade your computer's BIOS in order to use advanced power modes, such as Sleep.

The Hibernation mode might not be available on your Windows 7 laptop by default. You must make sure that your firmware can support Hibernation.

If the Hibernation mode does not appear by default and your system can support Hibernation, perform the following steps to enable the Hibernate function:

1. Open an elevated command prompt. (Right-click the command prompt and choose Run As Administrator, as shown in Figure 6.28.)

FIGURE 6.28
Running an elevated
command prompt



2. Click Yes at the dialog box.
3. At the prompt, type **powercfg -h on** and press Enter. Entering the same command and using the off switch would disable Hibernate on the machine.
4. Close the command prompt.

Now let's look at the different types of power options that we can configure.

Managing Power Options

You configure power options through the Power Options Properties dialog box. To access this dialog box, open Control Panel and click Power Options. The Power Options dialog box provides the ability to manage power plans and to control power options, such as when the display is turned off, when the computer sleeps, and what the power button does.

Configuring Power Plans

Windows 7 includes three configurable power plans: Balanced, Power Saver, and High Performance. Power plans control the trade-off between quick access to an existing computer session and energy savings. In Windows 7, each power plan contains default options that you can customize to meet the needs of various scenarios.

The Balanced power plan, as its name suggests, provides a balance between power savings and performance. By default, this plan is configured to turn off the display after 20 minutes,

and to put the computer to sleep after one hour of idle time. These times can be modified as needed. Other power options that can be modified include Wireless Adapter settings and Multimedia settings. You can configure wireless adapters for maximum power saving or maximum performance. By default, the Balanced power plan configures wireless adapters for maximum performance. You can configure the Multimedia settings so that the computer will not be put into Sleep mode when sharing media from the computer. For example, if the computer is acting as a Media Center device, you can configure the computer to remain on by setting the Prevent Idling To Sleep option so that other computers can connect to it and stream media from it even when the computer is not being used for other purposes.

The Power Saver power plan is optimized for power savings. By default, the display is configured to be turned off after 20 minutes of inactivity, and the computer is put into Sleep mode after one hour of inactivity. Additionally, this power plan configures hard disks to be turned off after 20 minutes of inactivity.

The High Performance power plan is configured to provide the maximum performance for portable computers. By default, the computer will never enter Sleep mode, but the display will be turned off after 20 minutes. When this setting is configured, by default, the Multimedia settings are configured with the Allow The Computer To Enter Away Mode option, which allows the computer to enter into a new power state called Away mode. Away mode configures the computer to appear off to users but remain accessible for media sharing. For example, the computer can record television shows when in Away mode.

You can modify the existing power plans to suit your needs by clicking Change Plan Settings, or you can use the preconfigured power plans listed in Table 6.2.

TABLE 6.2: Windows 7 Power Plans

POWER PLAN	TURN OFF DISPLAY	PUT THE COMPUTER TO SLEEP
Balanced	After 20 minutes	1 hour
Power Saver	After 20 minutes	1 hour
High Performance	After 20 minutes	Never

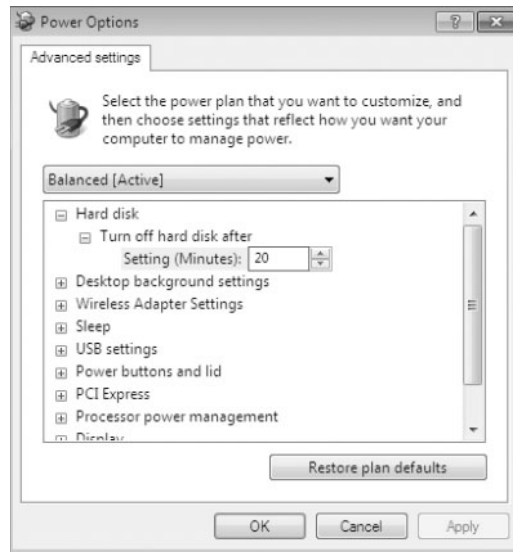
After you decide which power plan is going to be used, you might want to configure some of the advanced power options. In the next section we'll discuss the various power options.

Configuring Advanced Power Settings

Each power plan contains advanced settings that can be configured, such as when the hard disks will be turned off and whether a password is required on wakeup. To configure these advanced settings, open Control Panel, click Power Options, and select the power plan you want to use. Then click Change Advanced Power Settings to open the Advanced Settings tab of the Power Options dialog box, as shown in Figure 6.29.

You can then modify the settings as desired or restore the plan defaults. For example, one option that you might want to change if you are using a mobile computer is the Power Buttons And Lid option, which configures what happens when you press the power button or close the lid of the mobile computer. When either of these actions occurs, the computer can be configured to do nothing, shut down, go into Sleep mode, or go into Hibernate mode.

FIGURE 6.29
Advanced power settings



Configuring Hibernation

Although Sleep is the preferred power-saving mode in Windows 7, Hibernation mode is still available for use. Hibernation for a computer means that anything stored in memory is also stored on your hard disk. This ensures that when your computer is shut down, you do not lose any of the information that is stored in memory. When you take your computer out of hibernation, it returns to its previous state.

To configure your computer to hibernate, access the Advanced Settings tab of the Power Options dialog box. The Hibernate option appears under the Sleep option.

Perform the following steps to configure a power plan for your computer. If the Hibernate option is not present, perform the steps in the previous section to enable hibernation.

1. Select Start > Control Panel and click the Power Options icon.
2. Select a power plan to modify from the Preferred Plans list and click Change Plan Settings.
3. Configure the power plan options for your computer based on your personal preferences. Click Change Advanced Power Settings to modify advanced power settings. When all changes are made, click Save Changes.
4. Close Control Panel.

One advantage when you use a laptop on the battery is that you can see how much time you have left until the battery dies. Let's take a look at the battery meter.

Managing Power Consumption Using the Battery Meter

Windows 7 includes a battery meter that you can use to monitor the battery power consumption on your computer. The battery meter also provides notification on what power plan is being used.

The battery meter appears in the notification area of the Windows Taskbar and indicates the status of the battery, including the percentage of battery charge. As the battery charge gets

lower, the battery meter provides a visual indication of the amount of charge left. For example, when the battery charge reaches the low-battery level, a red circle with a white X is displayed.

The battery meter also provides a quick method for changing the power plan in use on the computer. By clicking the battery meter icon, you can select between the three preferred power plans available with Windows 7.

Using Windows ReadyBoost and Windows 7

With Windows Vista, Microsoft had introduced several new technologies to help boost operating system performance. Windows ReadyBoost is a new technology introduced with Windows Vista but is also available in Windows 7.

Windows ReadyBoost allows for the use of multiple nonvolatile flash memory devices as an additional memory cache. When the physical memory devices become full on a computer with Windows ReadyBoost configured, data is written to the flash device instead of to the hard drive. This improves performance because data can be read more quickly from the flash drive than from the hard drive.

When a compatible device is installed on a Windows 7 computer, a ReadyBoost tab is displayed on the device's properties page that can be used to configure Windows ReadyBoost.

To use a flash memory device with Windows ReadyBoost, the device must meet the following specifications:

- ◆ The device must have a storage capacity of at least 256 MB.
- ◆ The device must support USB 2.0.
- ◆ The device must support a throughput of 2.5 MB/sec for 4 K random reads and 1.75 MB/sec for 512 K random writes.

Configuring Advanced Settings

ReadyDrive is also a technology included with Windows 7 that you can use to speed up the boot process, resume from a hibernation state faster, and conserve battery power for mobile computers. ReadyDrive relies on new hybrid hard disks, which use flash memory technology in conjunction with mechanical hard disk technology.

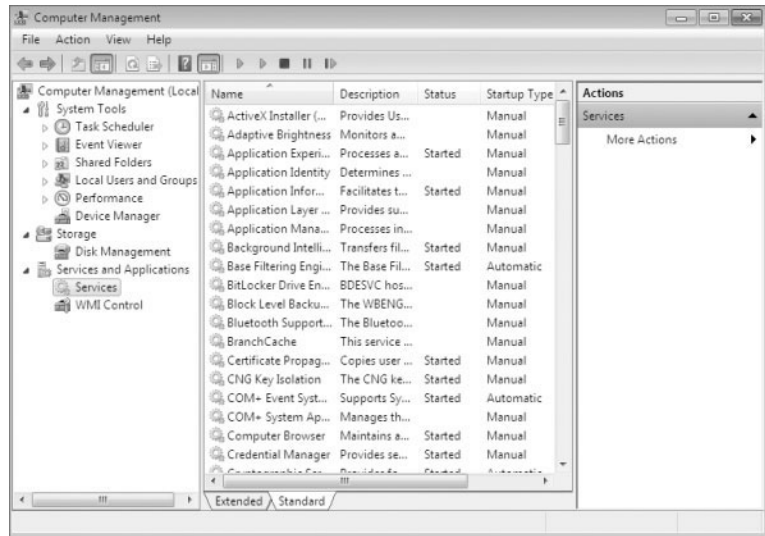
When you use ReadyDrive, data is written to flash memory instead of to the mechanical hard disk. This saves battery power because the mechanical hard disk does not need to perform as many read/write actions. Additionally, read/write times with flash memory is quicker than with traditional hard disk media, so resuming from hibernation occurs faster.

Configuring the power options on a laptop can help save energy and extend battery life. Another important item to take into account when configuring Windows 7 is how we are managing our Windows services.

Managing Windows 7 Services

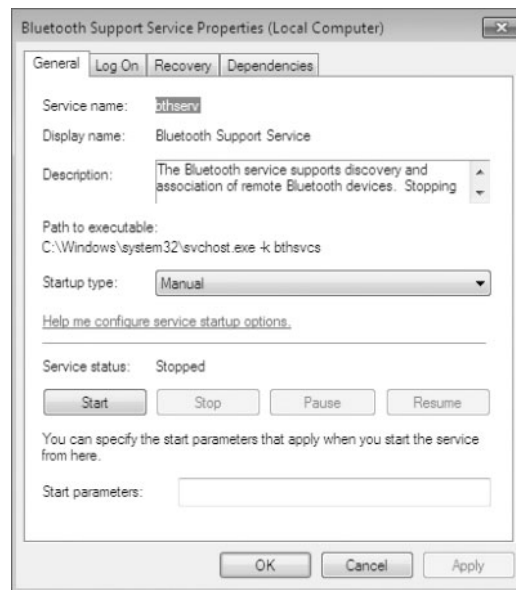
A service is a program, routine, or process that performs a specific function within the Windows 7 operating system. You can manage services through the Services window, as shown in Figure 6.30, which can be accessed in a variety of ways. If you go through the Computer Management utility, right-click Computer, select Manage, expand Services And Applications, and then expand Services. You can also go through Administrative Tools or set up Services as a Microsoft Management Console (MMC) snap-in.

FIGURE 6.30
The Services window



For each service, the Services window lists the name, a short description, the status, the startup type, and the logon account that is used to start the service. To configure the properties of a service, double-click it to open its Properties dialog box, as shown in Figure 6.31. This dialog box contains the following four tabs of options for services: General, Log On, Recovery, and Dependencies.

FIGURE 6.31
The Properties dialog box for a service



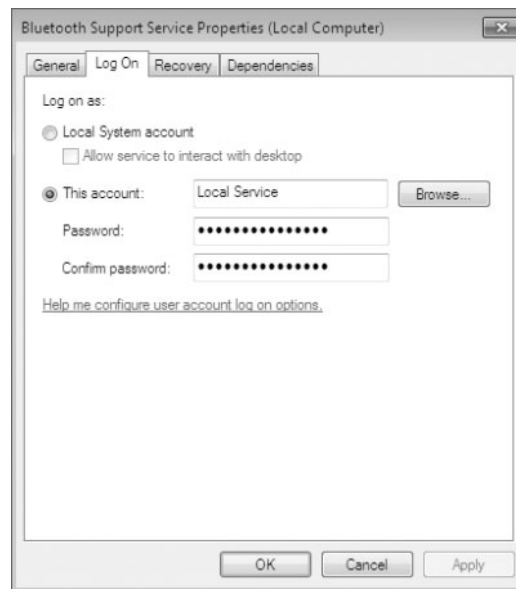
General Allows you to view and configure the following options:

- ◆ The service display name
- ◆ Display name
- ◆ A description of the service
- ◆ The path to the service executable
- ◆ The startup type, which can be Automatic, Manual, or Disabled
- ◆ The current service status
- ◆ Start parameters that can be applied when the service is started

In addition, the buttons across the lower part of the dialog box allow you change the service status to start, stop, pause, or resume the service.

Log On The Log On tab, as shown in Figure 6.32, allows you to configure the logon account that is used to start the service. Choose the local system account or specify another logon account.

FIGURE 6.32
The Log On tab of a service's Properties dialog box



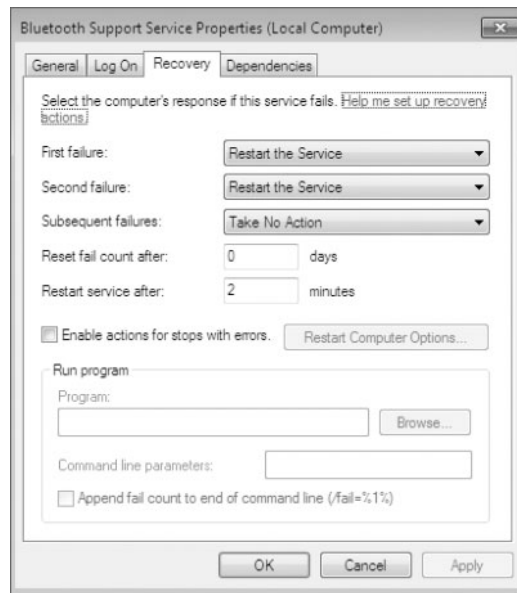
Recovery The Recovery tab, as shown in Figure 6.33, allows you to designate what action will be taken if the service fails to load. For the first, second, and subsequent failures, you can select from the following actions:

- ◆ Take No Action
- ◆ Restart The Service

- ◆ Run A Program
- ◆ Restart The Computer

If you choose Run A Program, specify it along with any command-line parameters. If you choose Restart The Computer, you can configure a message that will be sent to users who are connected to the computer before it is restarted. You can also specify how long until a machine is restarted if an error occurs.

FIGURE 6.33
The Recovery tab of
a service's Properties
dialog box



Dependencies The Dependencies tab, shown in Figure 6.34, lists any services that must be running in order for the specified service to start. If a service fails to start, you can use this information to examine the dependencies and then make sure each one is running. In the bottom panel, you can verify whether any other services depend on this service before you decide to stop it.

Perform the following steps to configure services in the Windows 7 operating system:

1. Start Computer Management by clicking Start and then right-clicking Computer. Choose Manage from the context menu.
2. In the Computer Management MMC, expand the Services And Applications section.
3. Click the Services link.
4. Scroll down the list and double-click Remote Desktop Configuration.
5. Under the Startup Type, choose Automatic.
6. Under the Logon tab, click the This Account radio button.
7. Click the Browse button and choose the local administrator account, as shown in Figure 6.35. Click OK.

FIGURE 6.34
The Dependencies tab of a service's Properties dialog box

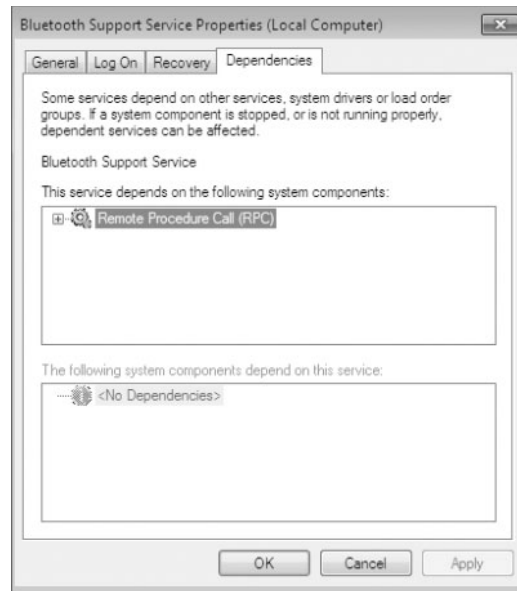
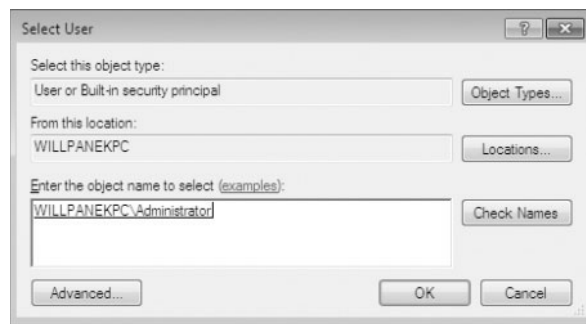


FIGURE 6.35
Select User screen



8. In the Password boxes, type and verify the Administrator password.
9. In the Recovery tab, make sure the following settings are configured, as shown in Table 6.3.

TABLE 6.3: Recovery Tab Options

ACTION	RESPONSE
First Failure	Restart The Service
Second Failure	Restart The Service
Subsequent Failures	Take No Action
Reset Fail Count After	1 Day
Restart Service After	10 Minutes

10. Click OK.
11. Close the Computer Management MMC.



Real World Scenario

SERVICES

As IT professionals, we have had to troubleshoot many problems while doing our job. One of the very first things we always check when encountering an error with an application is the services for that application. Many times you need to just set the service from Manual to Automatic to solve the problem.

If the service is set to Automatic and it is still not starting properly, check the Dependencies tab. The Dependencies tab shows you whether all the other services that are required to start this service are configured and running properly.

Services are just another troubleshooting and configuring tool that is part of your arsenal of troubleshooting techniques. Properly working services allow your Windows 7 operating system to work properly.

The Bottom Line

Understand Control Panel. Windows 7 uses the Registry when the operating system starts. The Registry is the database used by the operating system to store configuration information. Control Panel is a set of GUI utilities that allow you to configure Registry settings without using a Registry editor.

Master It You are the administrator for a large computer company. One of your salespeople calls and asks you if they can remove an old application from their machine. How would you instruct them to remove the old application properly from the Windows 7 machine?

Use the System utility. The System icon is one of the most important icons in Control Panel. The System icon allows you to view which operating system your machine is using; check system resources (processor, RAM); change the computer name, domain, or workgroup; and activate your Windows 7. From the System icon you can also configure the Device Manager, Remote Settings, System Protection, and Advanced settings.

Master It You are the system administrator for your organization and you have a salesperson who has been trying to activate his legal company version of Windows 7. He gets an error message stating that the product key is invalid. What can you do to help activate the Windows 7 machine?

Configure mobile computers. Windows 7 includes several features that are useful for laptop computers. One of the best features for laptops is configuring the power options. Power options allow you to select a power plan and enable power-management features with Windows 7. By selecting the proper power plan, users can increase the life of their battery.

Master It You are the administrator for a small company that uses only laptops for their end users. You need to configure the laptops to extend the life of the battery. How would you configure the power options on their laptops?

Configure services. A service is a program, routine, or process that performs a specific function within the Windows 7 operating system. Most applications and features use services to help make that application run properly.

Master It You are the system administrator for your organization and you have a salesperson who needs a service to start every time she turns on the Windows 7 system. How would you configure the service so that it starts when the salesperson starts her machine?