

A common task for any technician is installing and upgrading device drivers. The primary tool that you'll use is Device Manager. Devices will often work without any user intervention, but sometimes a technician needs to get involved.

Starting the Device Manager

Device Manager works similarly in Windows XP, Windows Vista, and Windows 7, but there are different methods of starting it.

To start Device Manager on Windows Vista or Windows 7, click Start, Control Panel. If necessary, change the view to Classic View on Windows Vista or to Large icons on Windows 7. Select Device Manager.



Many paths

These methods show a couple of ways to start Device Manager, but as with many tasks, there are many methods you can use. For example, you can also click Start, right-click Computer (or My Computer on Windows XP), and select Properties to start System Properties and access it from there. You can also access it from Computer Management.

Viewing Device Manager

When you open Device Manager, it displays the devices by type in groups such as disk drives, network adapters, and so on. If all the devices in a group are working, the group is collapsed. If there's an issue with any device, the group is expanded.

For example, Figure 6-9 shows the Device Manager on Windows 7. Two groups (Floppy Disk Drive and Other Devices) are expanded, indicating a possible problem. If a device has an issue, you can right-click it and select Properties and the Device Status section provides information about the error. In this case, the error is clear. The device is disabled, and you can click the Enable Device button to enable it.



Microsoft Error Codes

The errors aren't always so clear. The Microsoft knowledge base article at <http://support.microsoft.com/kb/310123> includes explanations for many error codes, in addition to steps you can take to resolve them. The article is geared towards Windows XP, but the same codes are used in Windows Vista and Windows 7.

The icons are slightly different on different operating systems, and Figure 6-9 has a partial key to show you some of the icons. The colors don't show up in the book, but for Windows XP, the question mark is yellow and the X is red. On Windows Vista, the exclamation mark is black on a yellow background. On Windows 7, the question mark is blue on a white background.



Device disabled

A down arrow in Windows Vista and Windows 7 indicates that a device is disabled. A black exclamation mark on a yellow background often indicates that the device driver is missing.

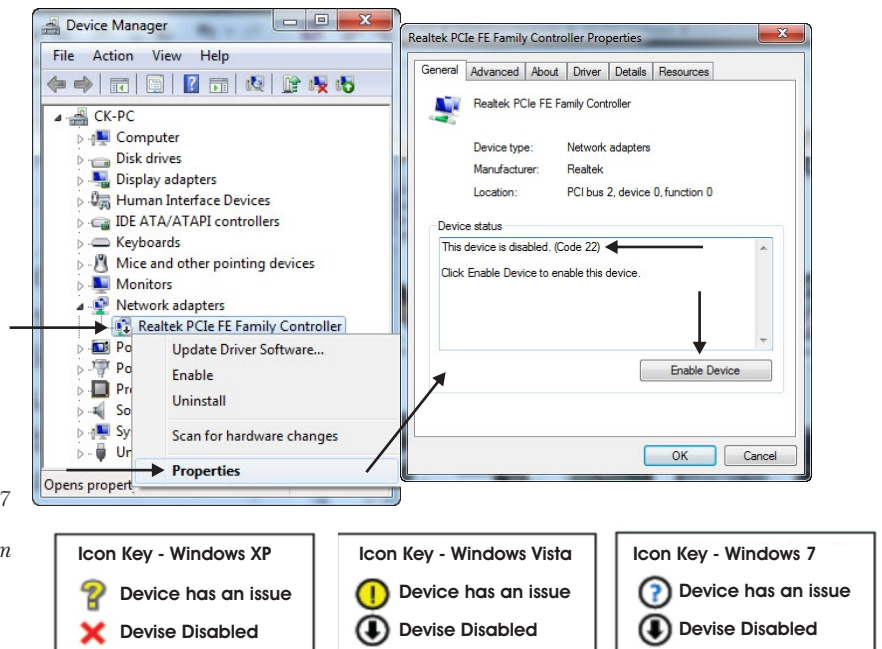


Figure 6-9 Device Manager.

Additionally, the issues can be somewhat different. For example, a black exclamation mark on a yellow background usually indicates that the device driver for a device is missing. It could also indicate that the driver is corrupted or not the correct driver for the device.

Updating Drivers

You can replace the existing driver with a new one by updating it. This is required if the existing driver is missing or not working properly. At other times, you might realize that all the features of the device are not enabled. By installing a new driver, you'll enable all the features.

If you right-click the device, select Properties, and select the Driver tab, you'll see a display similar to Figure 6-10.

This tab has some basic information about the driver, such as the date it was released and its version. You can click the Driver Details button to get a listing of each of the files used by the driver and their location on the hard drive.

Clicking the Update Driver button shows a display similar to Figure 6-11. The easiest way to update the driver is to click Search Automatically For Updated Driver Software. If the driver is available, Device Manager will automatically locate and install it.

If a driver isn't functioning properly, all the features aren't working, or there is an updated driver you want to install, you can update it. The Update Driver Software is available from the right-click menu. You'll be prompted to allow Windows to search for the driver, or you can browse to the specific location.

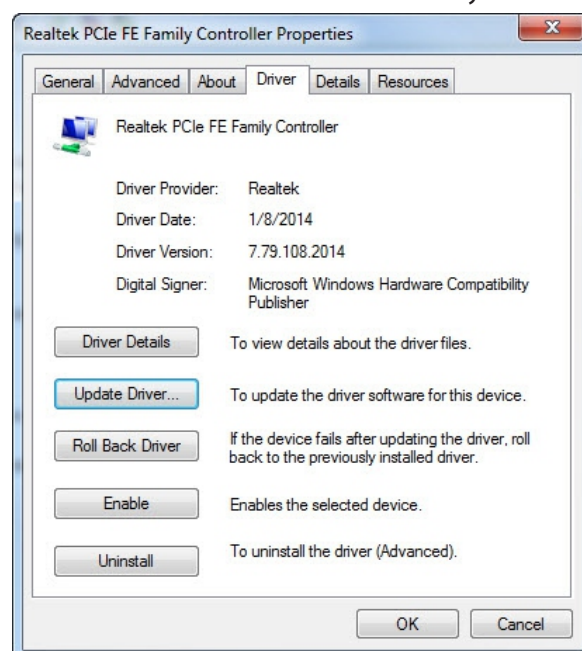


Figure 6-10 Driver tab.

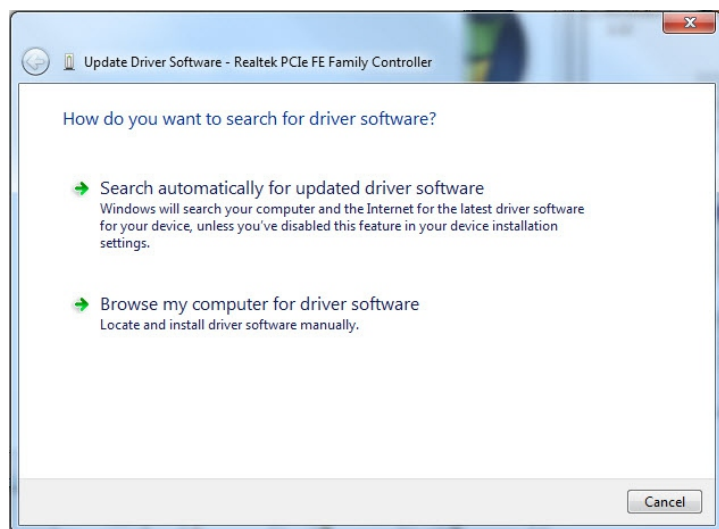


Figure 6-11 Updating a driver.

Often the manufacturer will submit the driver to Microsoft, and it is available through this method. Sometimes you'll have to do a little more work. For example, if you've recently installed a new graphics card, the most up-to-date driver might not be available on Microsoft's site.

You can download a new driver from the manufacturer's website and select Browse My Computer For Driver Software. You can then browse to the location where you saved the driver. When you select the correct location, Device Manager will install it.

Disabling and Uninstalling

There can be times when you want to disable devices in the operating system. For example, if a computer includes hardware that a company doesn't want employees to use, disabling the unwanted device ensures that it won't be used. Chapter 2 shows how you can disable devices in the Basic Input/Output system (BIOS), but it's also possible to disable devices from within Device Manager.

You can right-click the device from within Device Manager and select Disable, or if you have the device properties page opened and the Driver tab selected, you can click the Disable button. Disabling the driver keeps it disabled even after it restarts.

The Driver tab also includes the Uninstall button, but this can be misleading. It uninstalls the driver, but only temporarily. The next time the system starts, plug and play will detect the device and will reinstall the driver automatically.

Rolling Back Drivers

Ideally, after updating a driver, the device will work better than it did before. Occasionally, that's not the case. Sometimes it's possible to install a driver that results in the device not working at all. However, you can easily undo the change. A great feature available in Device Manager is the ability to roll back the driver to the previous version. If a second driver has been installed, the Roll Back Driver button is enabled, and by clicking this button, you can revert the driver to the previous version.

You can roll back only one version. For example, if you have Driver A installed and you upgrade it to Driver B, you can roll it back to Driver A. However, if you have Driver A installed, and then you install Driver B, and then install Driver C, you cannot roll it back to Driver A. The best you can do is revert it to Driver B.

This brings up an important troubleshooting point: if you make a change to a system and it doesn't correct your problem, return the system to the previous condition. If your system has a problem and you make 10 changes, you might correct the problem but also insert nine additional problems.

Windows Update

Operating systems include millions of lines of code. In a perfect world, all this code would always work. The truth is that, despite extensive testing, problems do appear. Vendors regularly release patches to correct these problems. A patch is an update to an operating system or an application and is just a small piece of code that fixes a problem with existing software.

For example, criminals often look for vulnerabilities in software. When they find a vulnerability, they write malicious software (malware), such as viruses, to infect systems. When vendors become aware of vulnerabilities, they develop and release patches. Systems that are patched are not vulnerable to the viruses. The unpatched systems become infected, and often the user is unaware of the problem.

Microsoft uses Windows Update to help users keep their systems up-to-date. Additionally, it's very easy to configure a system to automatically check for and install updates when they're available.

Updates available through Windows Update can be related to security, performance, or stability issues. These are classified as important, recommended, and optional updates.

- Important updates improve security, privacy, and reliability of the system. They should be installed as soon as possible and can be installed automatically. These are called high-priority updates on Windows XP.
- Recommended updates target non-critical problems. They can be installed automatically.
- Optional updates provide updates to drivers or new software. They can be installed only through user interaction.

You can access Windows Update on Windows XP, Windows Vista, and Windows 7 by clicking Start, All Programs, and selecting Windows Update. The system checks with a Windows Update site and compares available updates with updates that are currently installed. If updates are available, you'll see a display similar to Figure 6-12. You can then click Install Updates to begin the installation.

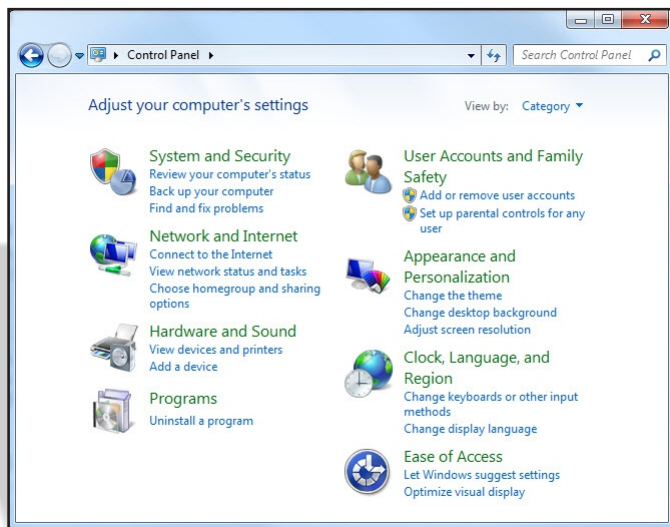


Figure 6-12 Windows Update.

Chapter 6

Laboratory Manual

CONFIGURING WINDOWS



Laboratory Activities

- 6.01 Performing a Backup and Restoration
- 6.02 Upgrading to Windows Vista SP2 and Configuring Automatic Updates
- 6.03 Installing Device Drivers in Windows

Chapter Analysis and Written Test

Lab Activity 6.03 Installing Device Drivers in Windows

Installing new devices under Windows is easier than it has ever been. Assuming, of course, that you start with compatible hardware, Windows will detect the new device and install the correct driver with little prompting. If that doesn't work, it is often just a matter of updating the driver or using Roll Back Driver. It's best to check the Internet for new drivers whenever you install a new device.

Even after a device has been installed, you should check for newer drivers periodically, even for devices that have been working fine. Manufacturers occasionally release new drivers aimed at optimizing the device or enabling it to work with some new technology. Keep in mind, however, that a new driver may cause unexpected problems with your operating system. Because of this, Windows XP introduced a feature that enables you to roll back to the previous (working) driver if something should go wrong with a driver update.

One of two wizards will assist you when you need to load a driver: the Found New Hardware Wizard or the Add New Hardware Wizard. Windows starts the Found New Hardware Wizard when it discovers some new hardware device while booting. If Windows has a driver in its database, it proceeds on its own. If not, the Found New Hardware Wizard will prompt you for one. The Add New Hardware Wizard enables you to add or update hardware manually at any time. There's a lot of overlap in how the two wizards work, so you'll look at just the Add New Hardware Wizard, which you can activate at any time.

Learning Objectives

Loading and removing device drivers is one of the basic skills that any good PC tech should have. The following lab exercise walks you through the process.

At the end of this lab, you'll be able to

- load a device driver in Windows
- roll back to a previously working driver



Adding hardware in Windows 7 has become so automated that you can't pretend to install a piece of hardware like you could in Windows XP and Windows Vista (as this lab exercise is about to instruct you to do). In the case of Windows 7, make sure your device is plugged in properly, and the OS will take care of the rest (though you might still need to supply drivers).

Lab Materials and Setup

The materials you need for this lab are

- a working PC with Windows XP, Windows Vista, or Windows 7 installed
- an Internet connection

Let's Get the Lab Started

This lab covers the steps for installing and updating device drivers. You'll also look at the steps to roll back (uninstall) device drivers that turn out to be incompatible.

Step 1 The first step before you begin installing any new device is to make sure it's compatible with your current Windows OS. Microsoft has removed the Windows XP and Windows Vista Web sites that detail device compatibility with those OSs, but you can find the Windows 7 Compatibility Center at www.microsoft.com/windows/compatibility/windows-7/en-us/default.aspx.

Step 2 Now you'll walk through the process of adding a device using the Add Hardware Wizard:

- From the Windows XP/Vista Control Panel, double-click Add Hardware. In Windows 7, open the Devices and Printers applet and click Add a device.
- On the Add Hardware Wizard's welcome screen, click Next. (Windows 7's Add a device wizard skips this step.)
- Select the device you want to install or update by either selecting from the given list or choosing the Add a New Hardware Device item in the list box. In Windows 7, select the device from the list. If it's not on the list, chances are the device is not properly plugged in. (Windows 7 users should stop here.) For Windows XP/Vista users, select the last item in the list Add a new hardware device and then click Next.
- Click the Install the hardware that I manually select from a list (Advanced) option button, and then click Next.
- Select the type of hardware you're trying to install or update from the list. If your device doesn't fit the descriptions, select the Show All Devices item. When you've made your selection, click Next.

- f. If you chose the Show All Devices item, the wizard displays the Select the device driver you want to install for this hardware screen. If you chose a specific type of hardware, you'll be led off into a series of options for that type of hardware.
- g. Choose the Windows driver for your device, or click Have Disk and point to the location of the new driver you want to install. This driver generally is located either on the installation CD-ROM that came with the device, if you have it, or on your hard drive if you downloaded it from the manufacturer's Web site.
- h. Click Next. Windows is ready to install the driver.
- i. Click Next again, and click Finish when the installation is complete.



If the Add Hardware Wizard doesn't find any new hardware, it asks, "Have you already connected this hardware to your computer?" Select Yes or No, and follow the directions.

You should now have a driver that runs your newly loaded device. If the device isn't working properly and you're sure the driver loaded correctly, you can check online and see if there's a newer driver that you can download from the manufacturer's Web site.

Step 3 What if you have a device already installed and you want to update the driver to address a problem, improve performance, or just add a new feature? This step will take you through updating new drivers.

- a. Begin by locating the updated driver. In most cases, the best way to obtain the updated driver is to search the Internet for the manufacturer's Web site. Search its site for your specific model, and download the most recent driver.
- b. Go to Device Manager and expand the appropriate device category. Locate the device you want to update.
- c. Double-click the device.
- d. Select the Driver tab and click the Update Driver button (see Figure 6-5). This launches a wizard similar to the Add New Hardware Wizard.

For Windows XP, select Install from a list or specific location (Advanced) and click Next. Select Include this location in the search, and browse to where you have saved the new driver.

For Windows Vista/7, click Browse my computer for driver software. Then choose Let me pick from a list of device drivers on my computer. Click the Have Disk button and then click Browse. You can locate the file from there.

You may be wondering, "What if I load a new driver, and my system doesn't work correctly anymore?" Well, you're in luck! Read the next step, and your question will be answered.

Step 4 If a driver is corrupt or if the wrong driver is installed, Windows has a bad habit of stopping dead in its tracks, rendering your PC useless. Windows XP and Vista/7 have a feature that keeps track of the drivers you install on a system and allows you to roll back to a previous one when a new one isn't working as it should.

- a. Go to Device Manager and locate the device you want to roll back.
- b. Double-click the device.
- c. Select the Driver tab. You can revert to the previous driver by clicking Roll Back Driver (see Figure 6-6).

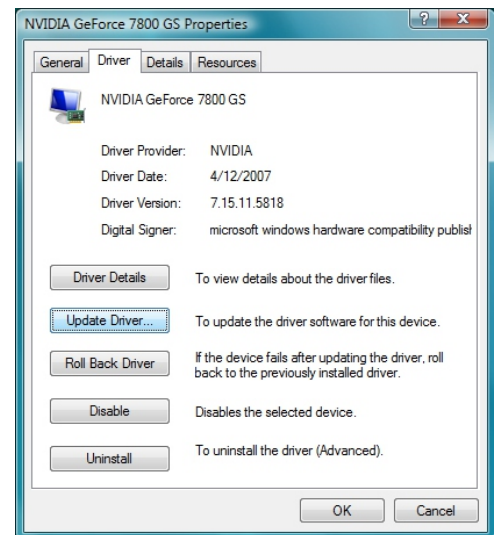


FIGURE 6-5 The Windows Vista Update Driver button

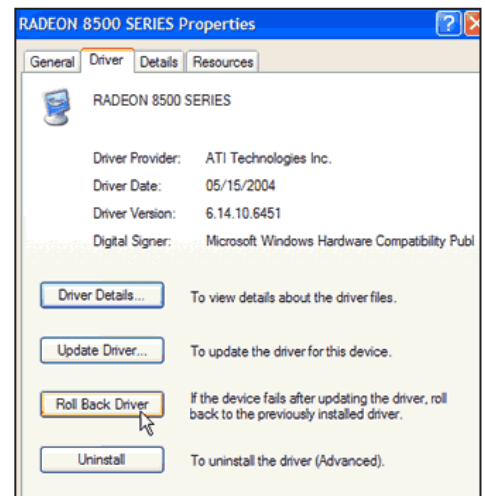


FIGURE 6-6 Windows XP's Roll Back Driver button