

18



Troubleshoot Problems in Windows 8

HOW TO...

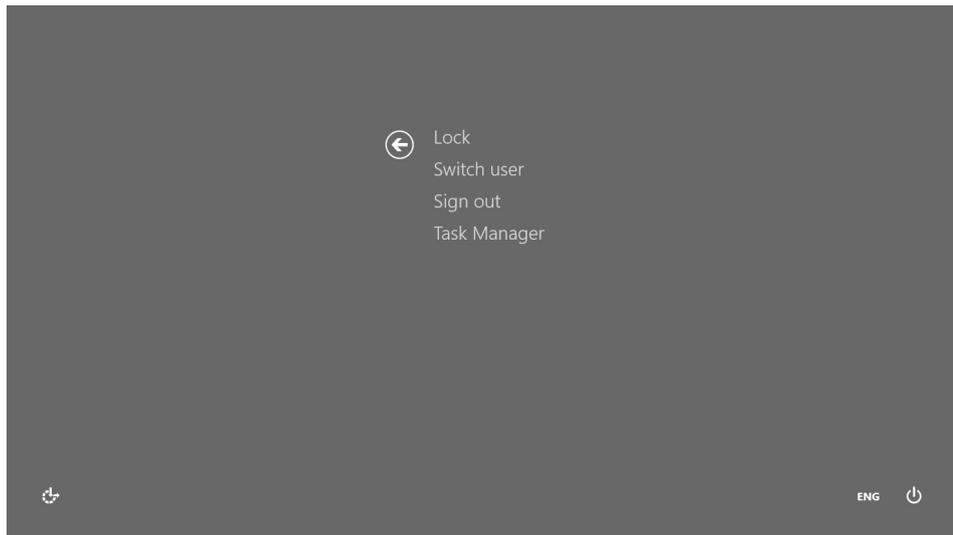
- Monitor your system with Task Manager
- Use troubleshooters to find and fix problems
- View problem reports, system information, and system logs to trace errors
- Check for compatibility issues and make older software run happily
- Find troubleshooting information online
- Ask a friend for help via Remote Assistance
- Snapshot the problem for an expert with the Problem Steps Recorder
- Start and stop services
- Restart in Safe Mode
- Allow an app through Windows Firewall
- Solve hardware problems with Device Manager
- Diagnose memory failures

Even if you use the tips in the previous chapter to keep your system tuned up, things still go wrong on computers from time to time, whether it's a hardware failure, incompatible software, bugs in a new driver, confusing error messages, or even a complete system crash. If you're having trouble with your computer, Windows 8 has a set of tools to help you fix it, including troubleshooting wizards that try to repair problems automatically; problem reports that warn you when something is misconfigured or turned off; tools to view system information to help you diagnose the fault and fix it yourself, and utilities that gather information you can pass on to a professional so they can help you sort things out. In this chapter we'll show you how to use the key tools in Windows 8.

Monitor Your System with Task Manager

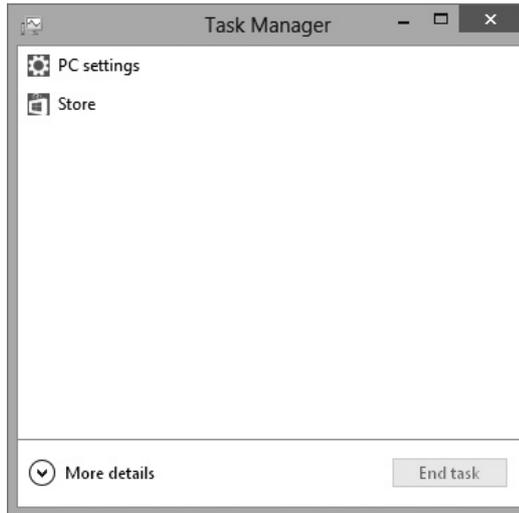
If one of your apps or programs isn't responding or your PC doesn't seem to be running as fast as it usually does, Task Manager is the place to start. This utility shows you which apps, programs, services, and processes are running in Windows so you can see how much CPU, memory, disk, or network bandwidth they're using and identify any that are using more resources than you expect. You can also check if your software is still responding to Windows, and shut it down if necessary. You can open Task Manager in several ways:

- From the Start screen, open the All Apps screen and then click or tap the Task Manager tile.
- Press CTRL-SHIFT-ESC.
- On the desktop, right-click or press and hold on any blank area in the taskbar and select Task Manager in the context menu that appears.
- Right-click or press and hold in the bottom left corner of your screen (or press WINDOWS-X) and choose Task Manager from the menu.
- Press CTRL-ALT-DELETE and select Task Manager from the screen that appears.



The first time the Task Manager window opens, it shows the Fewer Details view, with just a list of the Windows Store apps and desktop programs that are currently running. If you want to shut down one of the running apps or programs, select it in the list and then click or tap the End Task button. If you want to see more information

about your system resources and a list that includes all the services, background tasks, and processes that are running currently, click or tap More Details.



The More Details view makes the Task Manager window larger and adds multiple tabs that show more in-depth information. The Processes tab, shown in Figure 18-1, lists all the software that's currently running, organized into three sections:

- **Apps** Includes both Windows Store apps and desktop programs that you have open
- **Background processes** Includes services from both Windows and your own software, as well as the tools you can open from the notification area of the taskbar
- **Windows processes** Includes the programs that make up Windows itself, including Windows Defender

You can expand some of the processes to see another level of information; for a desktop program you might be able to see the windows and documents that are open. For system processes you can see any associated services or tools.

For each process, you can see what percentage of your CPU, memory, disk bandwidth, and network bandwidth it is using. If any of the processes have locked up or crashed, they'll be marked as Not Responding. The resource information is color coded; processes that are using more resources than others have their figures highlighted in darker yellow so that you can easily spot what is slowing down your system. You can also see the total resource usage at the top of each column. Again, this is a quick way to see why Windows might be running slowly.



If the CPU, memory, disk, or network usage for your system looks unusually high, click or tap on the figure at the top of the column you're interested in to put the processes using the most of that resource at the top of the list. Click or tap the top of the Name column to go back to the usual view.

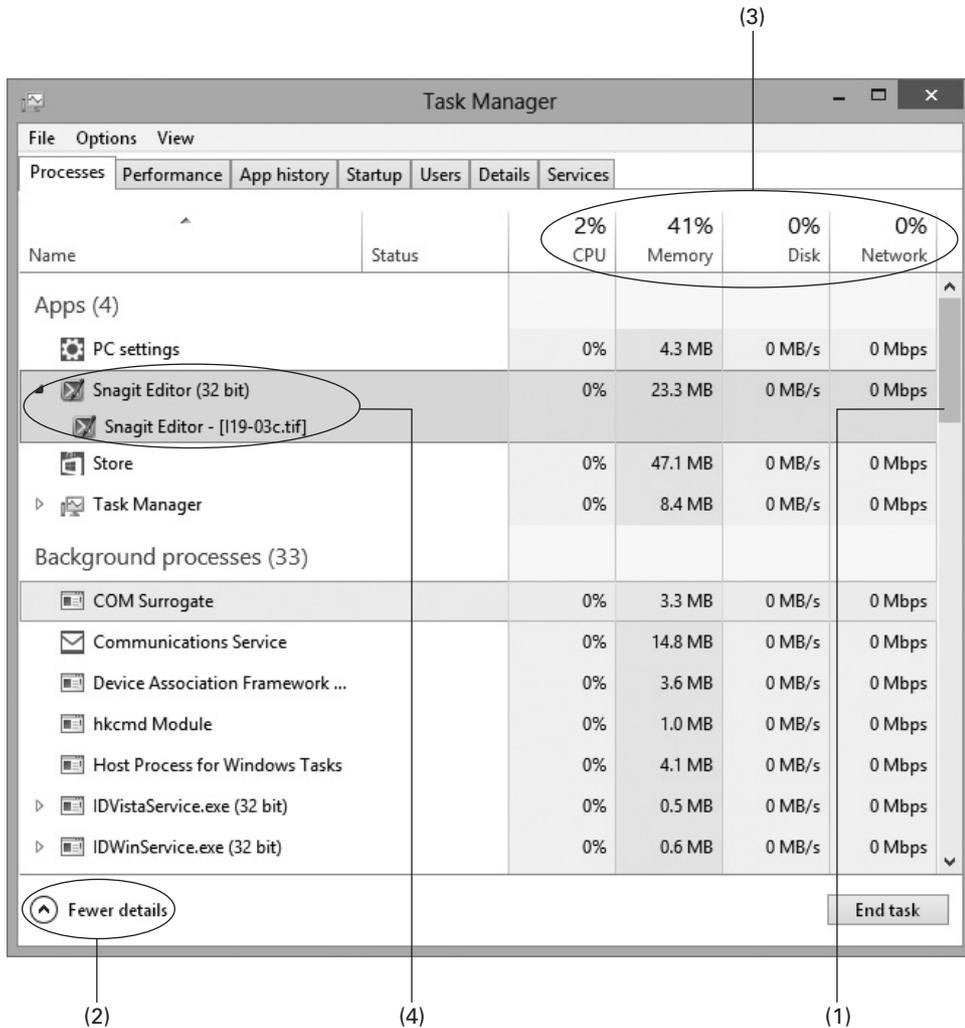
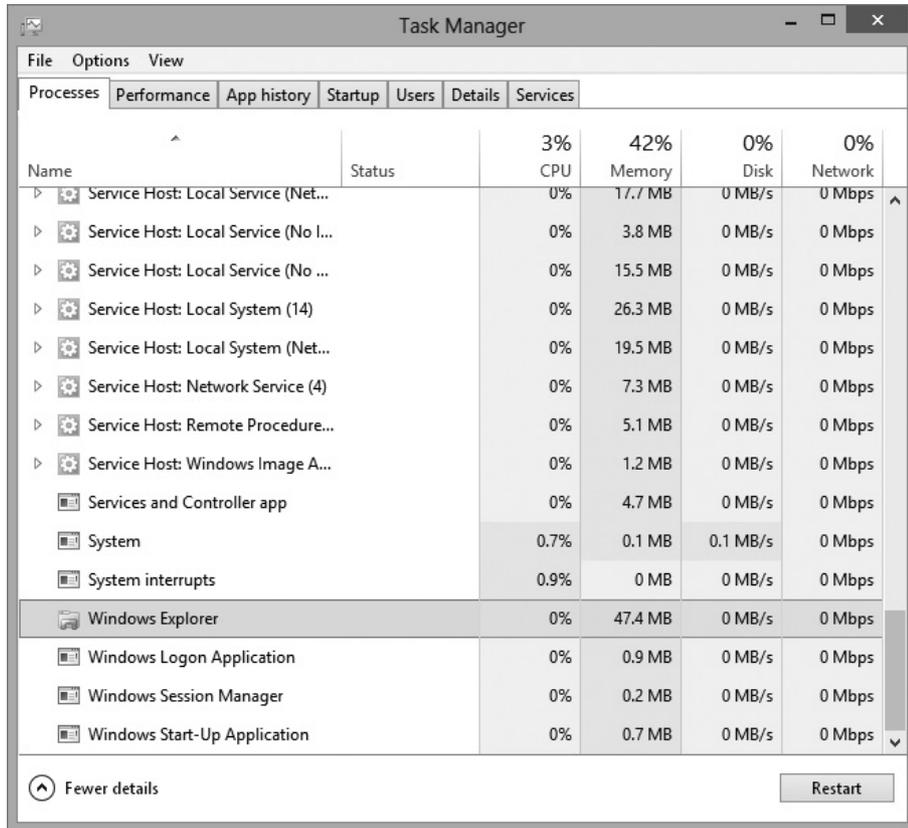


FIGURE 18-1 (1) Scroll down to view everything currently running on your computer. (2) Click or tap to switch back to the simpler view. (3) Click or tap a column heading to sort by resource use. (4) See the documents or windows open in a program.

Restart Explorer or Run a Process

The Windows Explorer process that you see in Task Manager is more than just File Explorer; it's actually the entire desktop environment, including the taskbar. If the Status for Windows Explorer is Not Responding, it may be a sign of a wider problem. The safest thing is to restart Windows, but you can also try restarting the Explorer process. When you select Windows Explorer in the list, the name of the button in

the lower right corner of Task Manager changes from End Task to Restart. Click or tap Restart and wait while the desktop reloads (the taskbar may go blank for a brief period). If Explorer doesn't reload correctly, you can start it from Task Manager by choosing File | Run New Task and entering the process name, which is EXPLORER .EXE. If you know the name of any process, you can start it from Task Manager the same way.



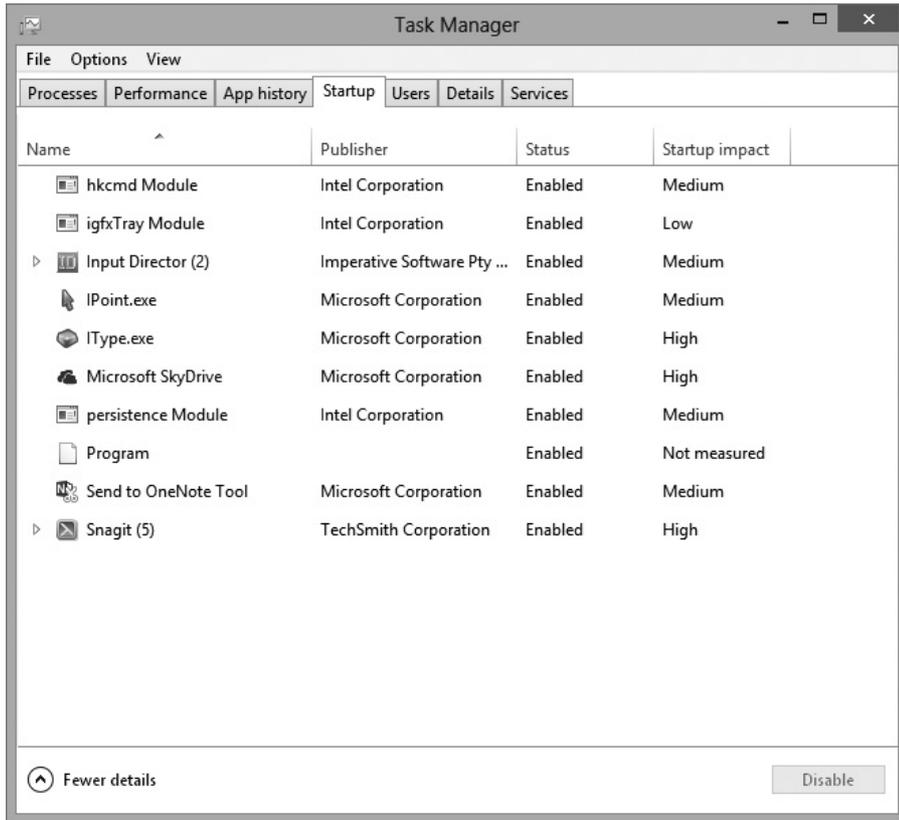
Manage Which Software Starts Automatically

If your PC is starting up more slowly than you expect, the problem might be either that you have too many programs set to start up automatically when you boot Windows, or that your system is having to wait for one specific startup program.

The Startup tab of Task Manager lists all the tools and programs that Windows loads automatically, as well as what impact each of these has on how long it takes Windows to start (High, Medium, Low, None, or Not Measured for software Windows hasn't yet profiled). If you want to stop a program from loading automatically, select it in the list and click or tap the Disable button. You can reenable the program later if you change

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your mind or find that having it start up when Windows does is useful enough to justify the extra wait.



Programs that start automatically with Windows don't actually run until you open the Windows desktop, and the desktop doesn't start until you open its tile, so remember to open the desktop to make your startup programs run. To have Windows Store apps like Mail and Calendar run automatically so that you get messages and reminders, just make sure they're on the list of notification items on the Lock screen, as covered in Chapter 2, and they will run in the background.

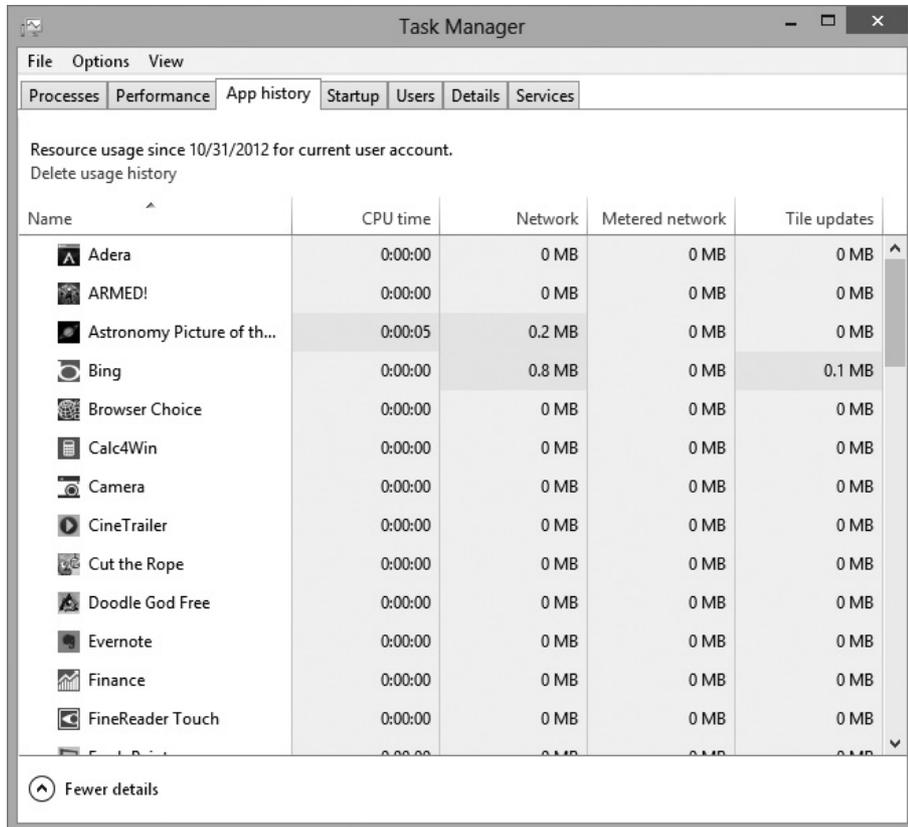


If the diagnostics that Windows runs automatically detect that startup is slow or that you have a lot of startup apps, you will see a message in Action Center (covered in Chapter 17) suggesting that you look at the startup list and turn off any that you don't need; click or tap the link to open the Startup tab in Task Manager.

View Your App History

The App History tab of Task Manager gives you some information about Windows Store apps that aren't currently running. It shows how much network bandwidth particular apps use, which is especially useful if you're using a metered network like

a mobile broadband dongle or connecting using your smartphone. Because you might have to pay extra if you use a lot of data, it's a good idea to keep tabs on which apps are using your mobile data. If you want to see the same details for desktop programs and Windows processes as well, choose Options | Show History for All Processes.



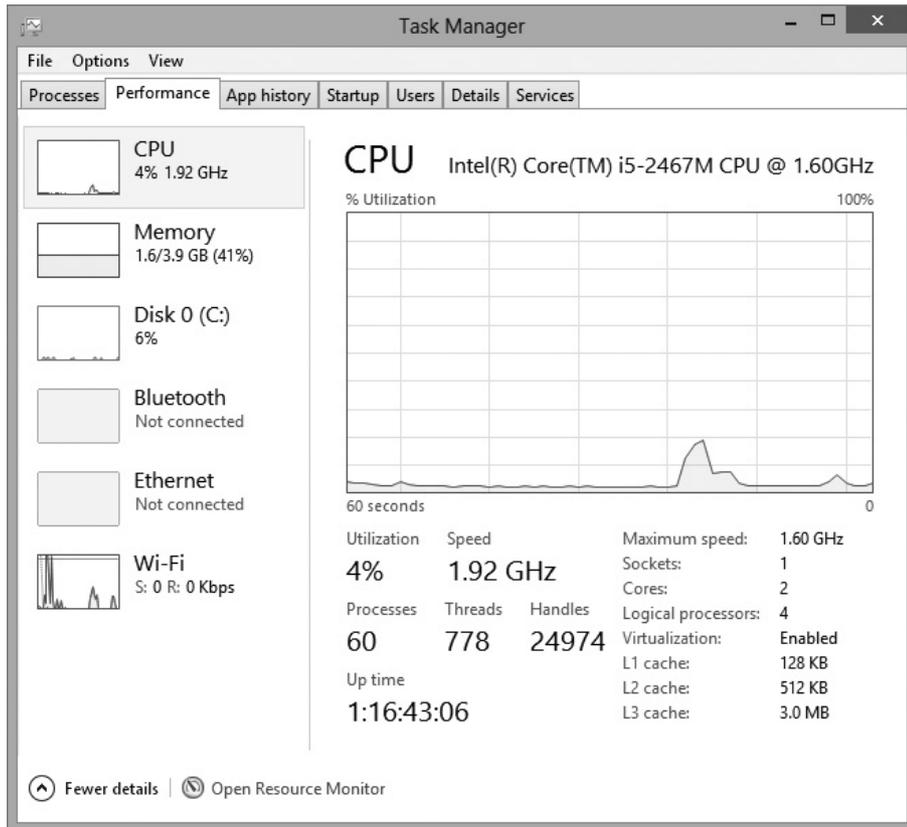
View More Details in Task Manager Tabs

If you can't solve your problem with the information on the Processes tab, you can get even more detail on the other tabs of Task Manager. Some of this information is very technical, but it might be useful to pass on to customer support to help them diagnose a problem.

- **Details** Provides advanced technical information about the different processes that are running.
- **Services** Provides more information about which Windows Services are currently running and which have stopped (Windows stops services that aren't needed, to save resources, but if a tool or program needs to use a service that's stopped, then you'll see problems). We'll cover starting and stopping services later in this chapter.

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- **Performance** Displays live graphs of how different system resources are being used. You can look back and see whether your PC has just slowed down because one program has starting using more CPU or the disk is busy. Select one of the small graphs to see more details (plus information about your hardware) and then look on the Processes tab to see which apps or programs are using the most CPU or disk bandwidth. If websites are loading slowly, select the network graph to see if network traffic is heavy. If it is, use the Network column on the Processes tab to see which other software is using the network and slowing down your browser.



Which graphs you see on the Performance tab depends on which hardware you have. You'll always see CPU, Memory, and Disk graphs, and if you have Wi-Fi, Ethernet, and Bluetooth connections, you'll see graphs for those too.



Tip

If you're looking for even more information, click or tap Open Resource Monitor at the bottom of the Performance tab.

- **Users** If you share your PC with other users and they're logged in at the same time as you, this tab shows you which system resource are being consumed by the apps and programs that those users are running.

Find and Fix Problems

If closing processes, checking resources, and managing services in Task Manager doesn't solve your problems, there are many other tools in Windows to help you. Start with the built-in troubleshooting tools and the reports in Action Center (see Chapter 17) before digging into system information and looking at low-level options like services and the Windows Firewall.

Caution

These days, most malware is designed to run without drawing attention to itself by causing problems on your PC that you might notice, because if you look into those problems you might find and remove the malware. But if you're seeing unexplained behavior, heavy network traffic, applications crashing, or processes you don't recognize running in the background, it's possible that your system is infected with a virus. Run a full scan in Windows Defender (see Chapter 18 for details) or other antivirus software you have installed. If you find a virus, you may be able to remove it, but if it's very persistent, you may want to consider refreshing your PC to put Windows back the way it was when you installed it (without losing your files—we'll explain how this works in the next chapter).

Use the Troubleshooters

If you're experiencing a specific problem with your PC, like not being able to connect to Wi-Fi, your notebook battery not lasting long enough, or sound not working properly, you may be able to get Windows to fix it for you by running the troubleshooters you'll find in the Control Panel (click or tap Find and Fix Problems under System and Security) or use the Troubleshooting link in Action Center).

Each *troubleshooter* is a wizard that helps you to solve common problems through a series of interactive steps, such as asking you questions about what you see on the screen. Based on your responses, the wizard then checks whether key settings are configured correctly and, if not, changes them for you.

There's a whole range of troubleshooters for different categories of problems that you can run from the Control Panel or Action Center. Some Windows tools have their own troubleshooters built in so you can get immediate help. For example, as described in Chapter 5, you can right-click or press and hold on the Network icon in the notification area of the taskbar and select Troubleshoot Problems to have Windows test and try to repair your network connection. Or if you are experiencing problems with your speakers, the volume icon in the notification area will have a red cross over it. Right-click or press and hold then select Troubleshoot Sound Problems.

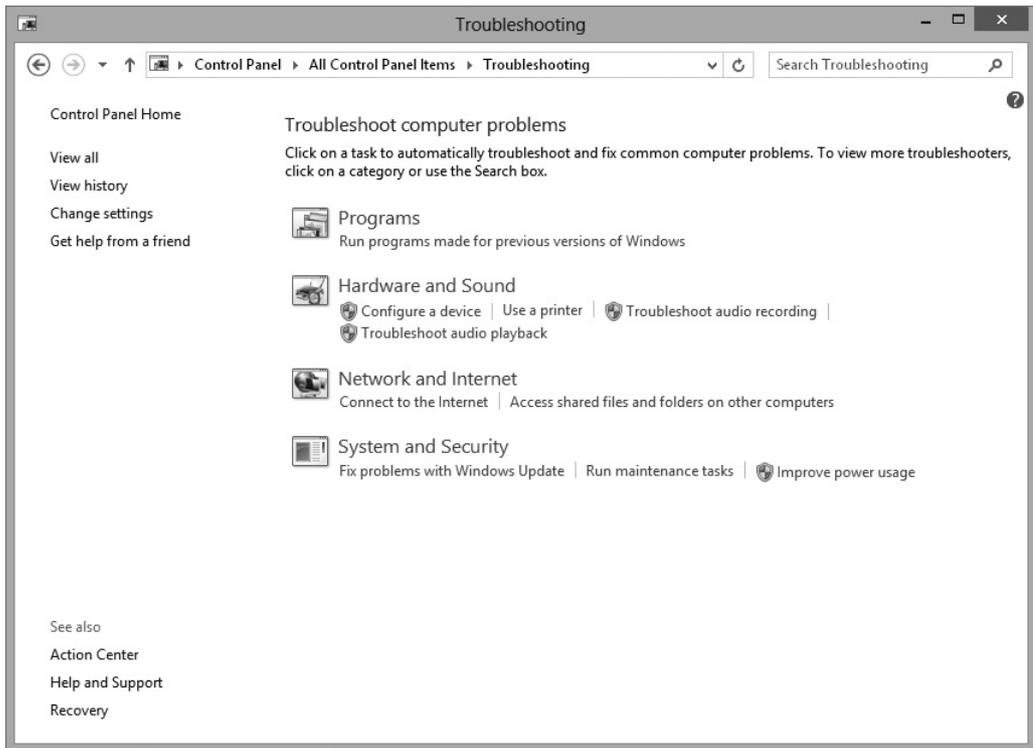
Tip

You can also run troubleshooters directly from the Windows Help and Support tool, which is covered later in this chapter. Search for what you're having problems with, and you will often see a link to a troubleshooter in the explanation.

The Troubleshooting control panel is organized into four sections: Programs, Hardware and Sound, Network and Internet, and System and Security. Troubleshooters

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for the most common problems have links on this main page, but you can also open the individual sections to see all the wizards that are available in that section (which might include new troubleshooters that Microsoft has published on its support website).



Caution

If a troubleshooter has the yellow and blue User Account Control (UAC) shield next to its name, that means the troubleshooter needs to change some important Windows settings, so UAC might ask you to confirm that you want to run the troubleshooter or ask for an administrator password. Windows uses UAC to notify you when you're about to make major changes to your system, which helps make it more difficult for malware to make changes to your computer without your knowledge.

Troubleshooters work like any other wizards in Windows. Each page of the troubleshooter gives you information about what it does or asks you some questions about the problems you're having. Click or tap the Next button to move through the steps. After the troubleshooter has collected all the information it needs from you, it will check your Windows settings (and display the message Detecting Problems) and make changes to try and fix them (Resolving Problems). Some troubleshooters

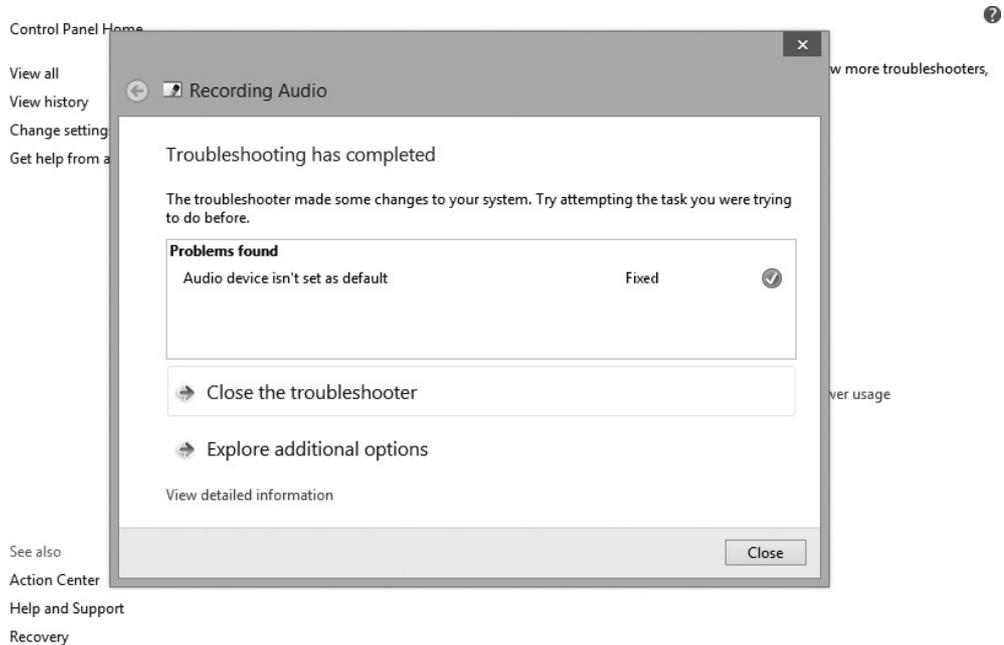


FIGURE 18-2 Scroll down the list to view the issues Windows found and some details about the troubleshooter itself.

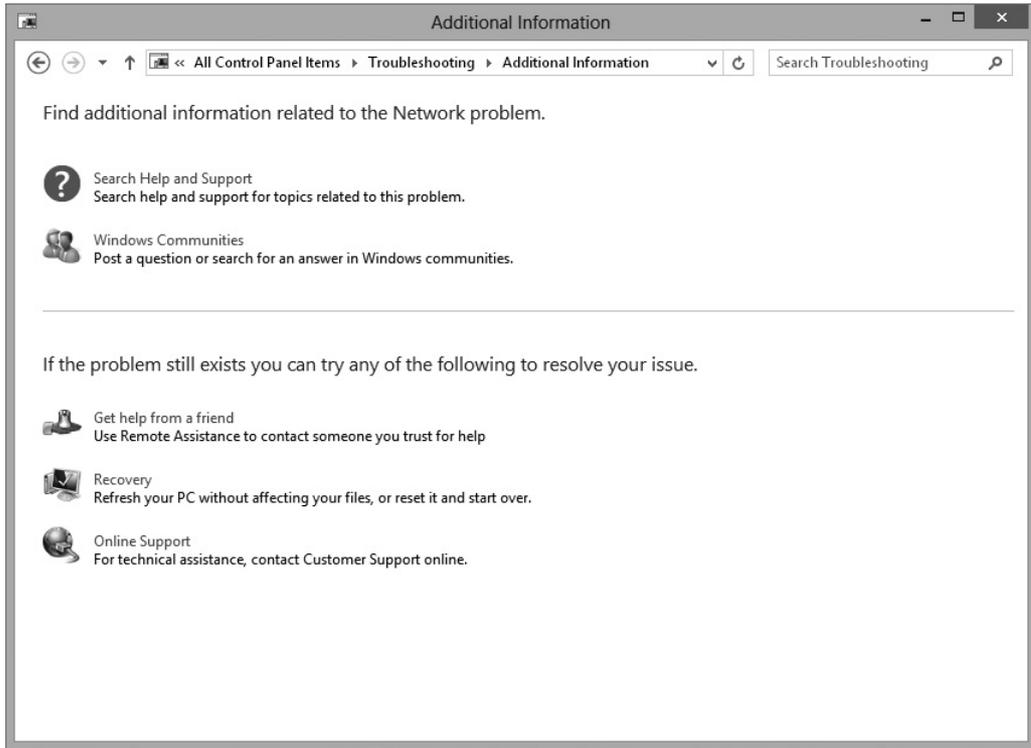
can test to see if the problem is fixed, but usually the final page will ask you to check whether things are now working correctly, as shown in the example in Figure 18-2. Click or tap View Detailed Information in the lower left corner of the window to open the Troubleshooting report showing what problems were found and what tests Windows completed.

Ask a Friend for Help Using Remote Assistance

If the troubleshooter doesn't fix your problem, click or tap Explore Additional Options (refer to Figure 18-2) to get a list of ways you can get more help. This opens the Additional Information page of the Troubleshooting control panel, which has links to the Windows Help and Support section on your computer, where you can search for information, and to the Microsoft Community website, where you can check to see if anyone else has found a solution to a similar problem or ask for help. If you want to go straight to the Windows 8 Microsoft Community forum, click or tap the Online

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Support button, which also has a link for the general Windows Support section on the Microsoft website, where you can search for related topics.



Tip

You can also use the Search box in the Control Panel to search for another troubleshooting tool that might help.

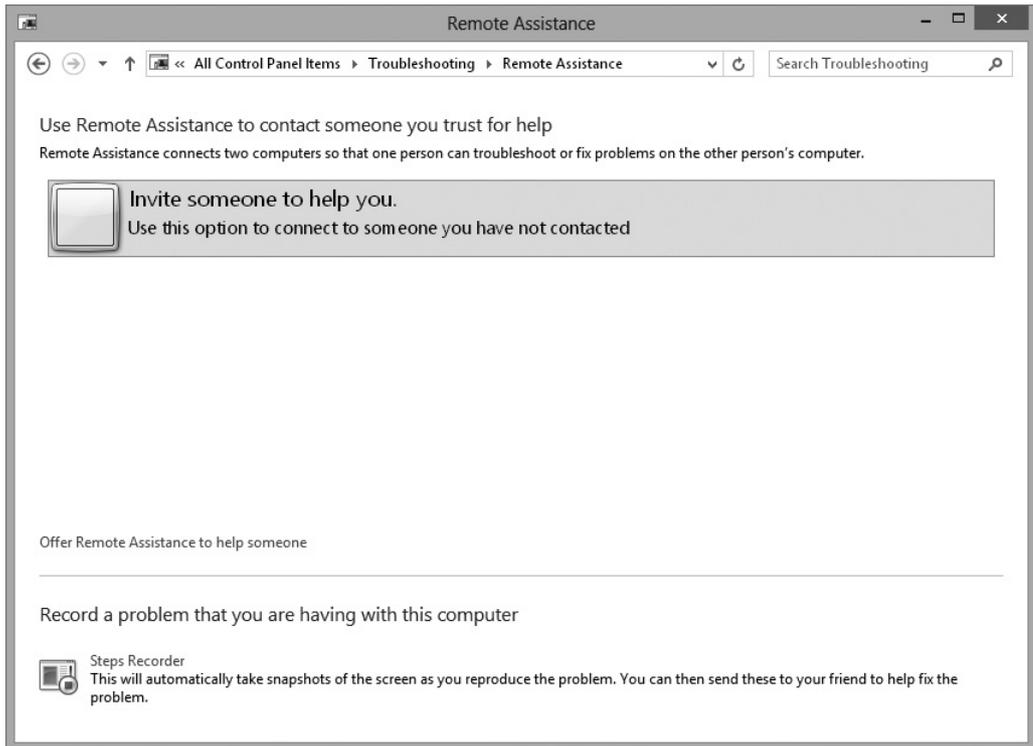
If the problem is serious, click or tap the Recovery link on the Additional Information page to open the recovery tools and to reset Windows to the way it was when you first installed it.

If you have a knowledgeable friend who may be able to help you fix your computer, you can open the Remote Assistance tool, which will let them connect to your computer remotely to see your screen, make changes, or show you how to make the changes yourself.

Caution

Because your friend will be able to see everything on your screen and even control your computer if you give them permission, it's a good idea to close any software or files that you don't want to share. They have to type in a password to get access to your PC, so that strangers can't try to take over your computer, but there are scams where you'll be asked to allow someone pretending to be a support expert to connect to your computer. Never let someone you don't know connect to your PC with Remote Assistance (and never accept technical support from companies who make unsolicited phone calls to tell you there are problems with your computer).

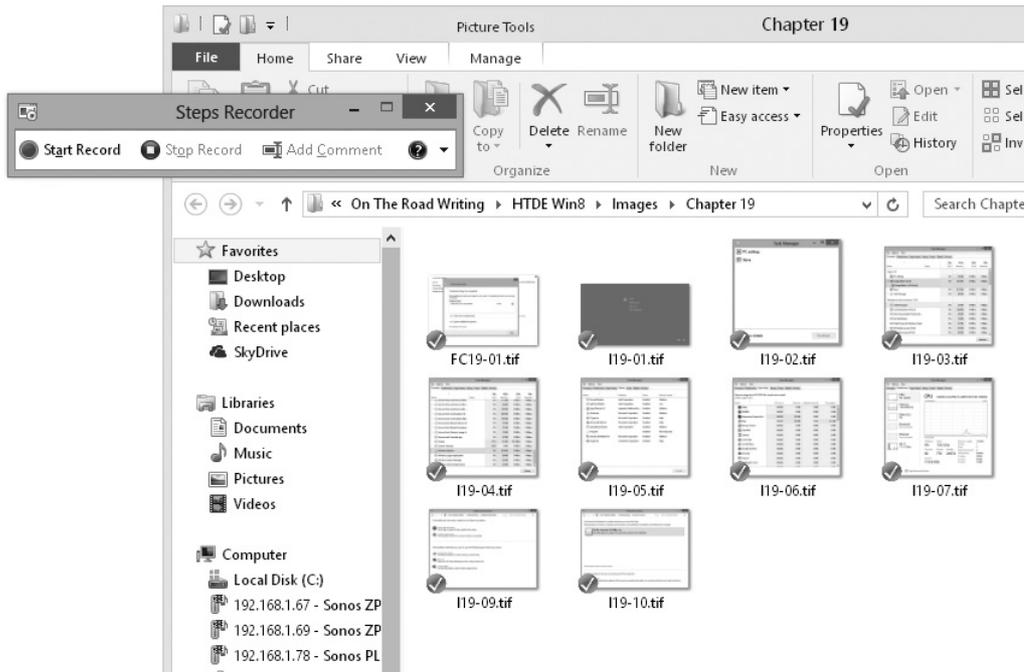
In the Remote Assistance window, click or tap Invite Someone You Trust to Help You and then choose whether you want to invite them via an email message or by using Microsoft's Easy Connect service. If you've asked the same person for help before, you'll see their name listed, so it's easy to invite them again. When they respond to your invitation, you'll see a dialog box asking you to let them connect. You can either chat in the Remote Assistance window or let them take control of your computer to make changes for you. You can click or tap Stop Sharing at any point to regain control.



Use the Steps Recorder to Capture a Problem

If you're asking a friend for help or talking to customer support, it's always easier to show them the problem rather than describing it. If you don't want to let anyone connect to your PC (or if the problem is intermittent, so you can't be sure they will

see it if they do connect), use the Steps Recorder to take snapshots of the screen (called *screenshots*) as you demonstrate the problem.

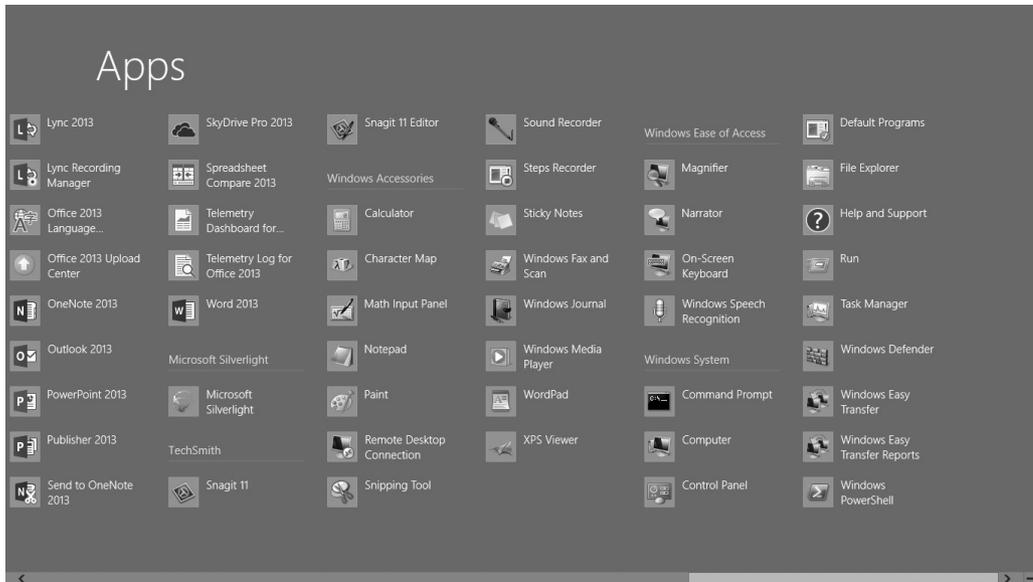


Open the Steps Recorder from the Windows Accessories section of the All Apps screen and then click or tap Start Record to begin taking screenshots. You can pause the recording if you need to do something you don't want recorded. Press CTRL-ALT-C if you want to add comments as you're recording. If you want to record screenshots for a Windows Store app, start Steps Recorder, switch to the app to record the steps, and then go back to the desktop and click or tap Stop Record when you're finished. Check that the screenshots show the problem, click or tap Add Comment if you want to describe or explain any of the steps, enter a name to describe the recording, and then click or tap Save. This creates a compressed Zip file that you can send to the person helping you.

Look Up Your Problem in Windows Help and Support

If the automated tools in the troubleshooters can't solve your problem, it's a good idea to find out a bit more about the feature you're having trouble with before you try anything else. Use the Help and Support area in Windows 8 to look for information;

often this includes links to tools that can help you solve problems. Windows Help and Support not only includes a database of information, but can also search the Microsoft website for more up-to-date information. Open Help and Support from the Windows System group on the All Apps screen.



You can open Help and Support for information on a specific Windows feature by pressing **F1** while you're using that feature.

The home page of Windows Help and Support has three sections you can open, as shown in Figure 18-3, or you can click or tap Browse Help to see a categorized list of help topics to explore. (For example, click or tap System Repair and File Recovery to see links explaining how to repair your system and recover your files.) For a specific problem, type the name of the feature into the Search box at the top of the window.

Check Reports in Action Center

Look in Action Center (introduced in Chapter 17) to see if there's a problem report that covers what you're trying to fix. If Windows has already found a solution, it will be listed at the top of the window. If not, open the Maintenance section and click or tap Check for Solutions under Check for Solutions to Problem Reports. Windows will check the list of problems it has detected; it may ask permission to send additional information about specific problems to Microsoft and if you agree, you'll have to wait for that to upload.

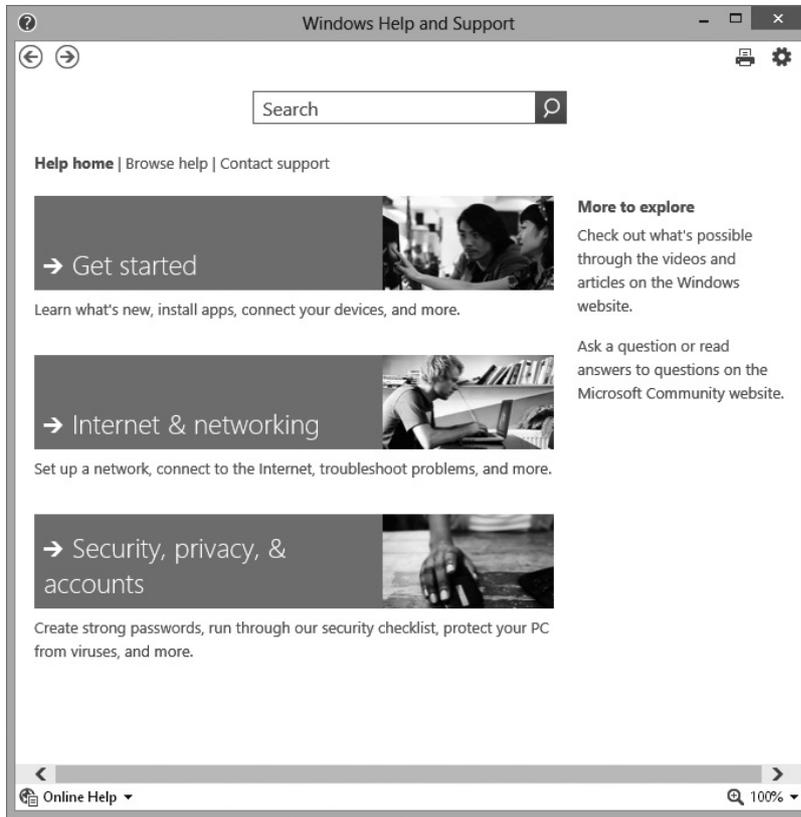


FIGURE 18-3 Click or tap the Windows Website link or the Microsoft Community Website link on the right side of the screen to visit the website and get more information.

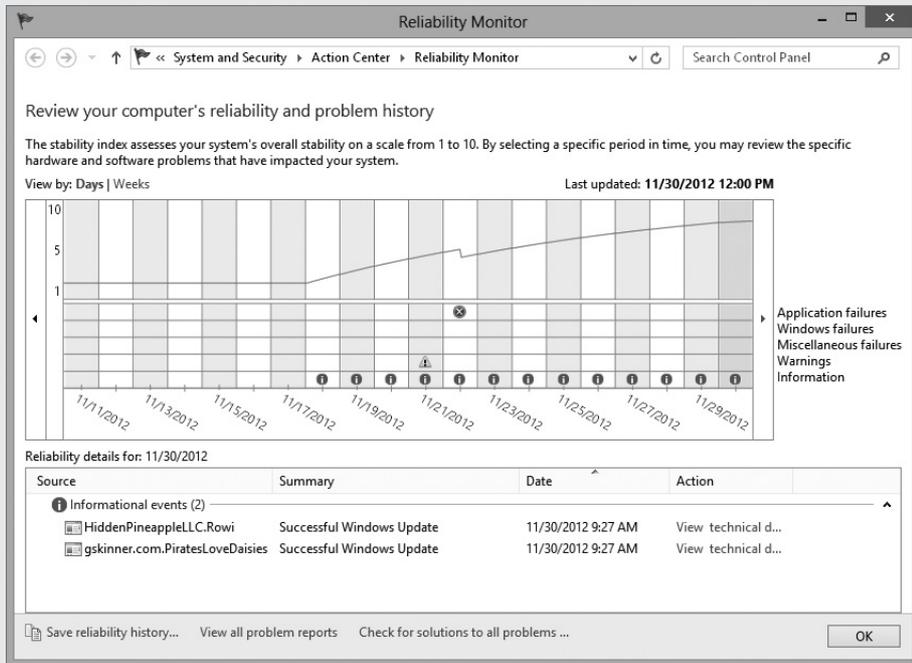
If you can't find any problem reports or solutions that cover the issue you're having, click or tap View Archived Messages in the Action Center navigation pane to see if Windows has detected the problem and suggested a solution before.

Check Program Compatibility Settings

If you're running a program that was created for an older version of Windows, you can tell Windows 8 to pretend to be that earlier version of Windows so that the software works properly. You can use the Program Compatibility Troubleshooter to check

How to... Check How Reliable Your PC Has Been

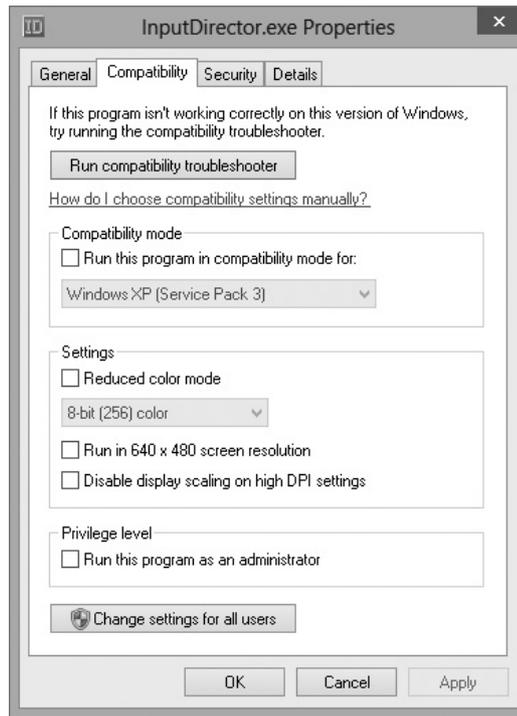
If you're not sure how long your problems have been occurring, click or tap View Reliability History at the top of the Maintenance section, under Check for Solutions to Problem Reports, to open the Reliability Monitor. This shows a chart of how stable your system has been over recent days and weeks. If there have been problems with your software or with Windows itself, you can scroll back and select a day or week to see the details, as well as which software you installed and what changes you've made. If you can pinpoint what changed on your system just before a problem started, you may have found the cause.



all the desktop programs you have installed to see whether any have compatibility issues. Open the Programs section in the Control Panel and, under the Programs and Features heading, click or tap Run Programs Made for Previous Versions of Windows.

If you're having problems installing or running a specific program and the troubleshooter doesn't fix the problem, you can run the troubleshooter for just that program or change its compatibility settings manually. Right-click or press and hold

on the program icon (on the desktop or in File Explorer), choose Properties, and then open the Compatibility tab. Click or tap the Run Compatibility Troubleshooter button at the top to run the troubleshooter, or change the following settings:



- **Run this program in compatibility mode for** If you know which version of Windows the program was designed for (or if you know it worked in a specific version of Windows), select this check box and choose that version of Windows from the drop-down menu.
- **Reduced-color mode** Some older programs work better if you limit them to fewer colors. When you select this check box you can choose a color mode from the drop-down menu.
- **Run in 640 × 480 screen resolution** If the graphics for the program look jagged or don't display correctly, select this check box to tell Windows to run the program in a smaller window.
- **Disable display scaling on high DPI settings** If you make the text on your screen larger using the high DPI settings in Windows 8 (instead of reducing the resolution), that can make older programs harder to read. This setting reduces that problem.
- **Run this program as an administrator** Often, older desktop programs expect you to be logged in as an administrator, and try to use privileges that aren't available when you're using a standard account. If you're comfortable with the security risk of running older software with administrator privileges and the program won't run otherwise, choose this setting.

Check Your System Information

If you're asking a friend for help or discussing your problem with other users in the Microsoft Community groups, they may ask you for more details about your PC. In Action Center, click or tap View Performance Information in the navigation pane to see the Windows Experience Index performance score for your system, like the score for this tablet PC, then click or tap View and Print Detailed Performance and System Information.

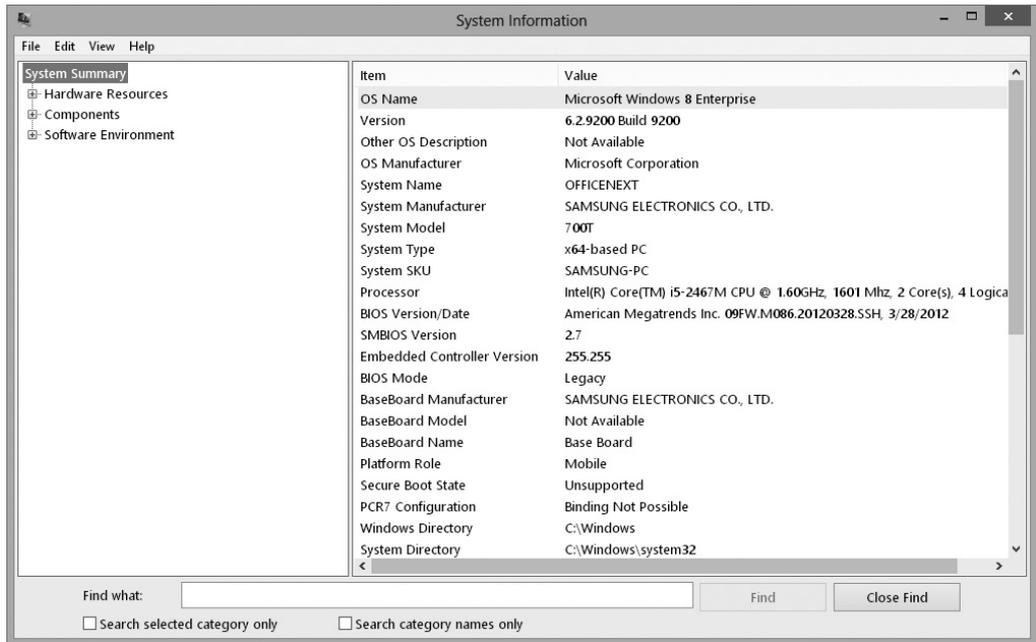
The screenshot shows the 'Performance Information and Tools' window. The title bar reads 'Performance Information and Tools'. Below the title bar is a navigation pane on the left with 'Control Panel Home' and several links: 'Adjust visual effects', 'Adjust indexing options', 'Adjust power settings', 'Open disk cleanup', and 'Advanced tools'. The main content area is titled 'Rate and improve your computer's performance' and includes the text 'The Windows Experience Index assesses key system components on a scale of 1.0 to 9.9.' Below this is a table with the following data:

Component	What is rated	Subscore	Base score
Processor:	Calculations per second	6.2	<div style="text-align: center; font-size: 2em; font-weight: bold;">4.4</div> <p>Determined by lowest subscore</p>
Memory (RAM):	Memory operations per second	5.9	
Graphics:	Desktop graphics performance	4.4	
Gaming graphics:	3D business and gaming graphics performance	5.3	
Primary hard disk:	Disk data transfer rate	7.4	

Below the table, there is a printer icon and the text 'View and print detailed performance and system information'. At the bottom, it says 'Your scores are current' and 'Last update: 8/22/2012 3:13:19 AM'. There is also a 'Re-run the assessment' button. In the bottom left corner, it says 'See also' and 'Action Center'.

You can find out even more about your computer setup in the System Information tool. Click or tap Advanced Tools in the navigation pane of the Performance Information and Tools window and choose View Advanced System Details in System Information. The System Summary shows general info about your PC, like the make and name of

your computer, which processor it has, and how much memory is installed. The rest of the information is intended for support professionals and covers your hardware, peripherals, and low-level Windows software tools.



View System Events

Windows keeps logs of all significant events on your system, like Windows starting and shutting down, applications running, security errors, slow drivers, and other performance problems. If you run into a problem, you can review these logs to see what happened and when. Open Event Viewer by choosing Advanced Tools in the Performance Information and Tools window, or from the Advanced Tools menu that you open by pressing **WINDOWS+X** or by right-clicking or pressing and holding in the lower left corner of your screen.

The Event Viewer window is organized into three panes. The left pane contains a folder list of views and logs. Start by navigating to the System entry under Windows Logs to see recent events.

In the middle pane, shown in Figure 18-4, you can see a list of all system events, which includes the event level, the date and time the event occurred, the source of the event (such as Windows Update), and the event ID Windows assigned to the event. Event Viewer marks each system event as Information, Warning, Error, or Critical.

Click or tap an event in the list to view the details of the event.

The Actions pane on the right side of the window contains a list of commands. For example, under the Event section heading in the list, you can click or tap Event

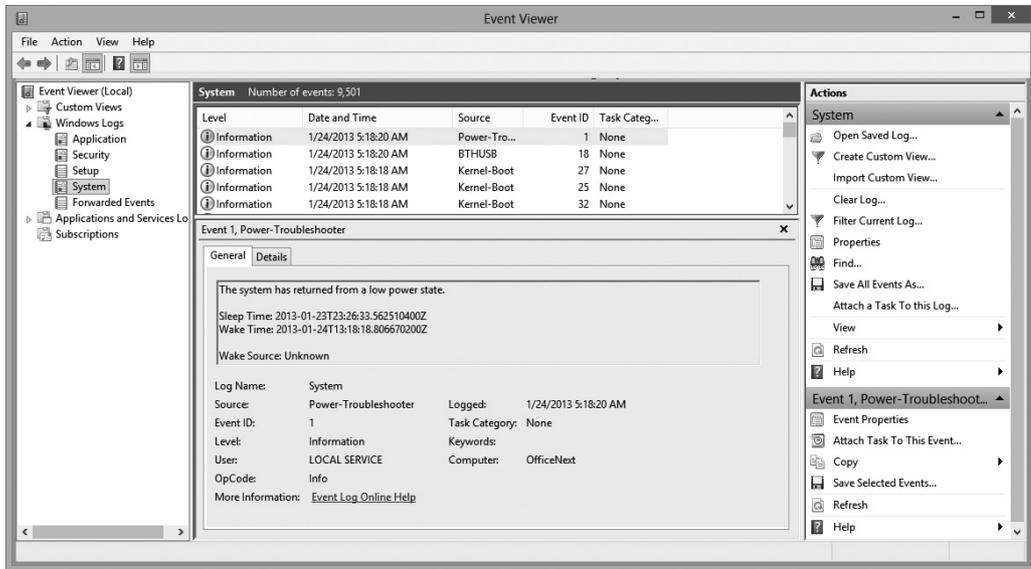


FIGURE 18-4 Looking at the most recent event from the System events list in Event Viewer

Properties to open an event in a larger window so the details are easier to read. Use Filter Current Log to narrow down the list of events—for example, by showing only errors.

Start and Stop Services

A Windows *service* is a small application that runs in the background to handle specific functions in Windows, like indexing files so you can search them or saving changes into File History. Some services are part of Windows, while others are part of different desktop programs like Adobe Acrobat (tools that check for updates usually run as a service).

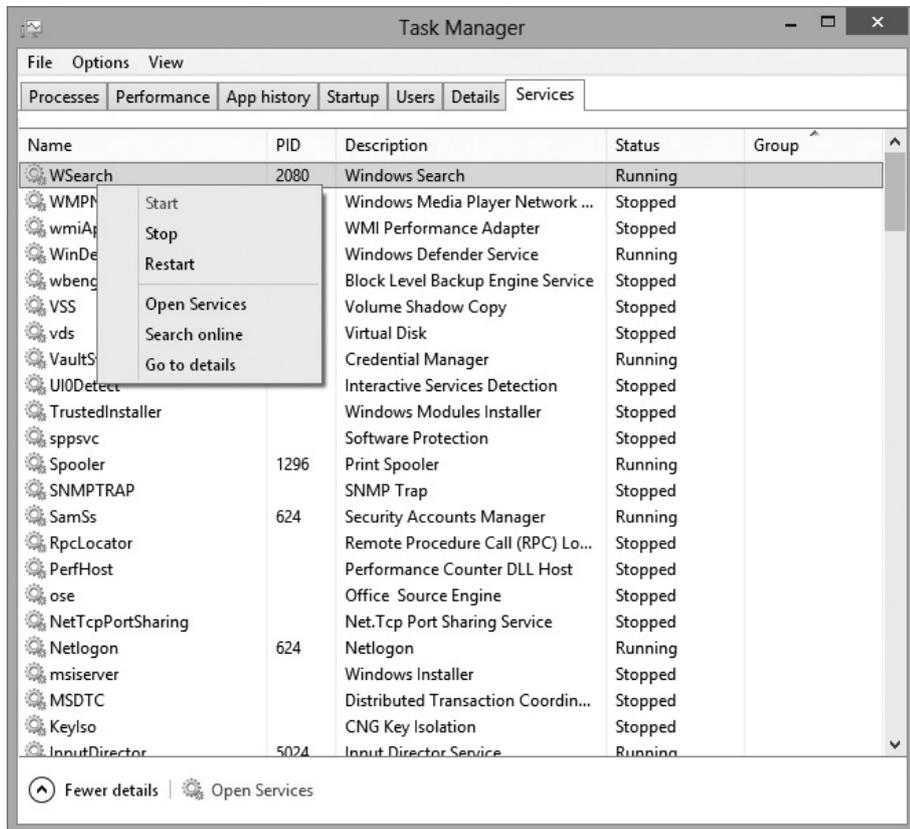
Did You Know?

You Can View Many Different Types of Logs

There are several categories of logs you can view in the Event Viewer window. In the folder list shown in Figure 18-4, you can also view Application, Security, Setup, and Forwarded Events logs within the Windows Logs folder. If you want to view logs for applications and services, double-click or double-tap the Applications and Services Logs folder.

Usually you don't need to worry about services, and generally it's not a good idea to stop services because Windows turns off any services that aren't needed. But there may be times when you'll need to stop a service because it isn't functioning properly, is interfering with other software, or is using too many system resources. Or if a service needed by a program isn't running, you may want to start it manually.

You can see a list of services, including whether they're running or stopped, in the Services tab of Task Manager. Right-click or press and hold on a service to open the menu, where you can start a service, or stop or restart a service that is already running. If you want to find out more about services or change whether a service starts automatically or is controlled by Windows, click or tap Open Services at the bottom of the Services tab.



The Services window organizes detailed information about all the services on your system into the columns you can see in Figure 18-5:

- **Name** The name of the service.
- **Description** A brief description of what the service does.
- **Status** If the service is active, it's labeled Running.

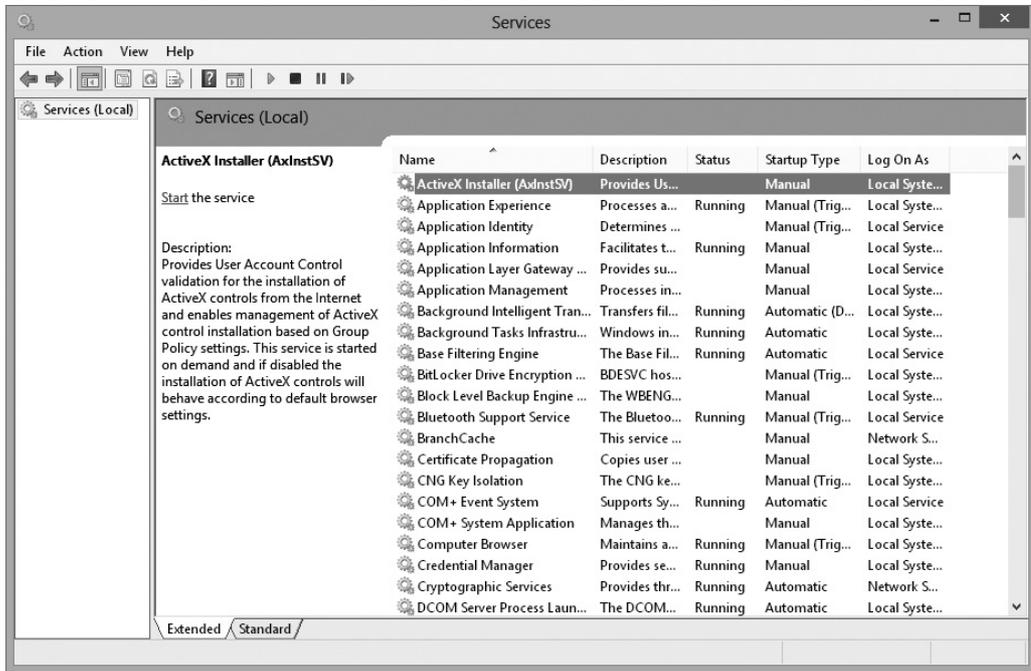
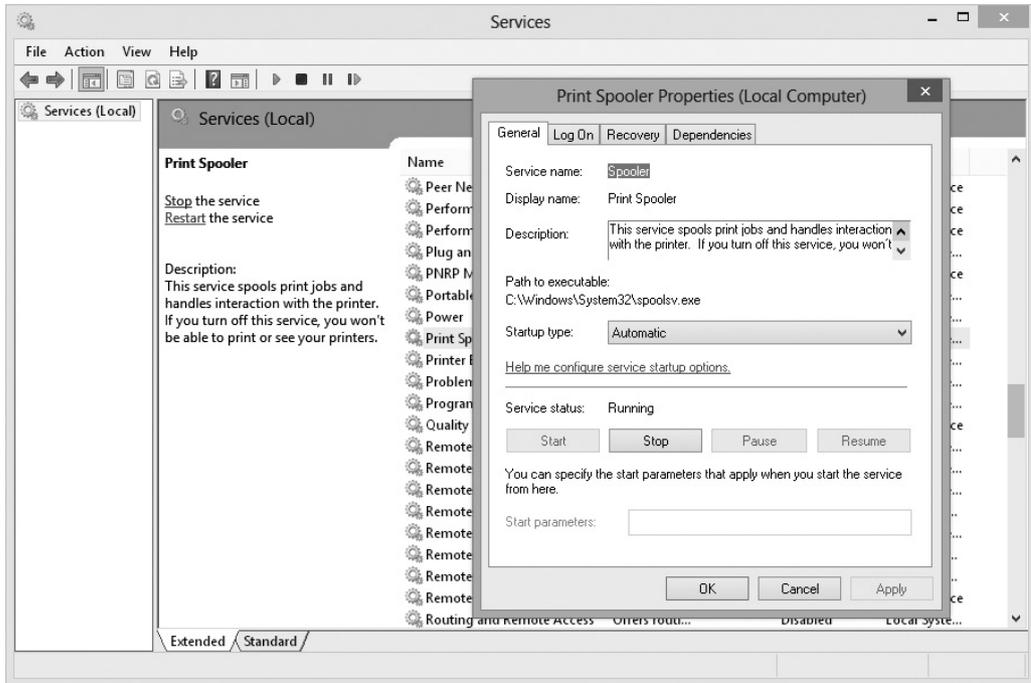


FIGURE 18-5 See which services are running and change how they start up if necessary.

- Startup Type** Some services are started automatically by Windows (Automatic), while others are started only if a program or another service needs them (Manual). Services that are not allowed to start are labeled Disabled. Both manual and automatic starts can be triggered by actions that you take. For example, the Device Install Service isn't started when Windows loads; it's started manually when it's needed, and only when it's triggered by you connecting a device that needs to be installed. Services that are labeled Delayed Start are still started automatically by Windows but not until after you've logged in and started using your PC, so you're not waiting for them when Windows first boots.
- Log On As** Which permissions a service gets depends on how it's logged in to Windows: as a Local System, as a Local Service, or as a Network Service.

When you select a service in the list, its complete description appears in the pane on the left. If the service is running, you will see a link to Stop or Restart the service. If it is not running, you will see a link to Start the service. The description of the service in the left pane may also include warnings about features that will stop working and other problems that may occur if the service is stopped or disabled. For example, if you stop the Print Spooler service, you won't be able to see your printers or print any files. Or, if you stop the Plug and Play service, your system won't be able

to detect any devices you add or remove, and it might even crash when you unplug devices because it will carry on trying to use them. Right-click or press and hold on a service and choose Properties to see more details about how the service runs. On the Dependencies tab, you can see which other services must be running for this service to run correctly, as well as which services depend on this service. You can't use the fax features in Windows if the Print Spooler service isn't running, for example.



Changing how services start up usually isn't a good idea. Although you can do this on the General tab of Properties, if you're having a problem with a service, it's better to try to recover or refresh Windows (which we'll show you how to do later in this chapter).

Start in Safe Mode

If Windows is crashing and Reliability Monitor hasn't helped you track down what's making it unstable, you can try a process of elimination. Starting Windows in Safe Mode loads only the basic files, settings, and drivers needed to run Windows. If you still experience the problem while in Safe Mode, then the best option is to refresh Windows, because the problem is in Windows itself. If you don't experience the problem in Safe Mode, you can start the programs you use one by one until the problem starts happening again, helping you track which software is causing the problem.

To start in Safe Mode, open PC Settings, select the General section, and, under Advanced Startup, click or tap Restart Now. Choose Troubleshoot, then Advanced Options, and then Startup Settings. Click or tap the Restart button, and when you see the Startup Settings screen again, choose Safe Mode (you may be able to do that

with your mouse or by touching your screen, or you may need to use the keyboard). Remember to sign in with an administrator account.



If you refresh Windows, reinstall your apps and programs, and still encounter the same problems as before, then the problem is with either your hardware or some of the software you have installed (rather than in Windows itself). Refresh Windows again and install your applications one by one. When the problems start, the last app or program you installed is likely to be the problem.

If Windows isn't starting up correctly, the system may be able to repair itself: follow the same steps for starting in Safe Mode, but when you get to the Advanced Options screen, select Automatic Repair. Again, you will need the administrator password and you may be prompted to make choices during the repair. If Automatic Repair can fix the problem, your PC will restart normally; if not, you will see a message that Automatic Repair couldn't repair your PC. Choose Advanced Options to try again or Shut Down to turn your PC off.

Allow Applications Through Windows Firewall

If software you're trying to use doesn't seem to be working correctly, check whether it needs an online connection that's being blocked by Windows Firewall.

Many of the apps and programs on your system connect to online services to send and receive information. For example, Mail needs to download your messages, and your favorite games may download high-score leader boards. But malicious software

also wants to send and receive data. A *firewall* is a tool that analyzes incoming and outgoing network traffic and determines if the packets of data that software wants to send or receive should be transmitted to and from your computer or not. Windows 8 has a built-in firewall, called Windows Firewall, that runs automatically when Windows starts up to protect your computer from attackers trying to gain access to Windows and to data stored on your computer, but its protection might also interfere with some legitimate programs.

While you're online, Windows Firewall is constantly checking all the data that comes into your computer, for example as you check your email or talk to friends on Skype. Unless incoming traffic is a response to a request from your PC, or on the list of traffic you always allow, then it will be blocked; so your messages arrive safely and your Skype calls get through, but commands from an attacker trying to control your computer can't get through.

There are plenty of apps and programs that you want to allow to send and receive information. For example, if you use the SkyDrive software to keep copies of documents in the cloud or if you want to get automatic updates for software you have installed, those programs need to be able to connect to the Internet. Most applications can connect without needing you to give them extra permissions to pass through Windows Firewall, but if you're having problems with software that requires a connection, you may need to set Windows Firewall to explicitly allow the connection.

Tip

If an app or program tries to connect in a way that triggers Windows Firewall to block it, a message will warn you that the connection has been blocked. You can click on this message to see more details and choose whether to give the software more permissions to connect, if necessary.

Add Allowed Apps

You can open Windows Firewall either from the Start screen by searching for it in Settings or from the Control Panel. Under System and Security, click or tap Windows Firewall to see the current settings; you can also choose Allow an App Through Windows Firewall to see what's already allowed and add new apps and programs.

Did You Know?

Windows Firewall Alone Isn't Enough Protection

Viruses and other malware can be merely irritating or very dangerous, interfering with your productivity by running programs you don't know about, sending sensitive data (like passwords and bank information) without your knowledge, and passing themselves on to other computers. While Windows Firewall gives you some protection, some attackers are very clever and persistent, and it's possible that malware and viruses will eventually get through Windows Firewall. That's why it's important to use the built-in Windows Defender antimalware protection (or other antivirus software) as well (see Chapter 17) and to check which applications are running on your computer.

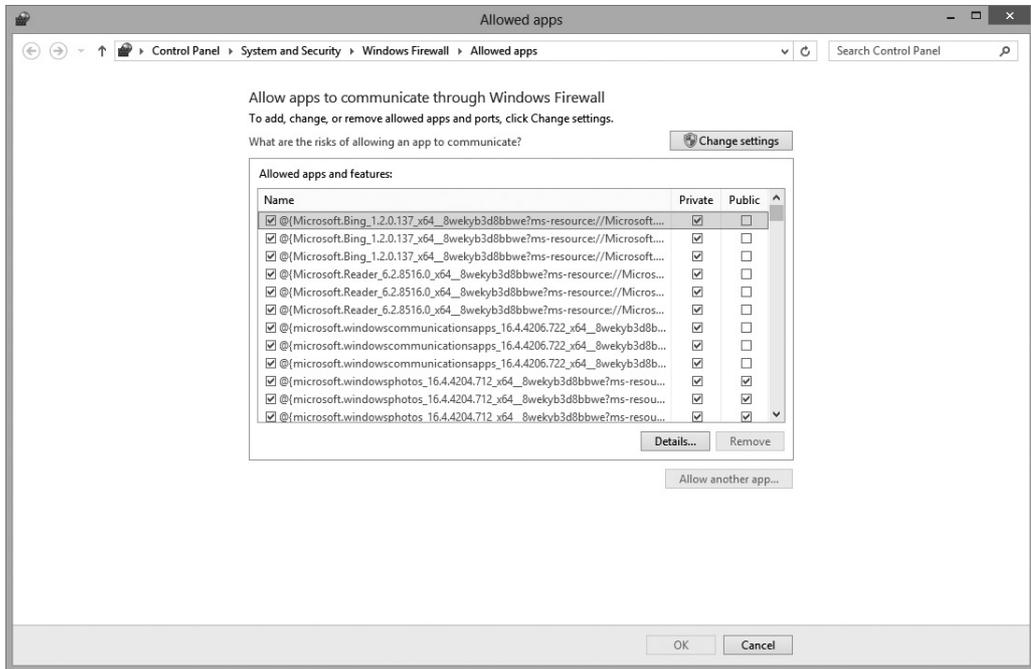


FIGURE 18-6 The list of allowed apps and features

In the Allowed Apps page, shown in Figure 18-6, you can scroll up and down the Allowed Apps and Features list to see all the Windows Store apps and desktop programs, plus some features of Windows itself, that are already allowed through the firewall, as well as those that don't have special permissions. For each app, program, or feature, you'll see details of what's allowed on the two different types of networks that Windows Firewall controls:

- **Private** A check mark in the Private column indicates that Windows Firewall allows this software to connect to online services when you're connected to your private network, such as your company network or the Internet connection you have at home. These networks are considered to be more secure not only because you know and trust the people in your network and know more about how the networks are set up, but also because it's harder for an attacker to connect to a private network. You should still take precautions on a private network, in case someone else has malware on a computer that's connected to it.
- **Public** A check mark in the Public column indicates that Windows Firewall allows this program to run on any network you use, including public networks such as Wi-Fi hotspots in a hotel or coffee shop. By default, Windows increases the security options for your computer when you're on a public network, because you don't know how the network is set up or who else is using it.

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Some programs are allowed to connect on both kinds of network and you will see check marks in both columns.

Caution

When you allow an app or program through Windows Firewall, you're allowing it to send and receive information. This could make your PC less secure, because an attacker or malware might be able to use that to attack your PC. Never allow an application that you don't recognize to communicate through the firewall. If you see an entry in the list for an app or feature that you're not familiar with, disable it and see if that causes problems.

Click or tap the Change Settings button to switch to working as an administrator so you can choose to give specific Windows Store apps or desktop programs permissions to go through the firewall. Select the app or program you want to allow (if you aren't certain you have the right one, click or tap the Details button to see the name and description). If you want the application to work only on more secure, private networks, click or tap the check box to the left of its name; the check box in the Private column will automatically be selected as well. If you want the software to be available on any network wherever you are, click or tap the check box in the Public column as well.

If you want to limit the access of an application that currently has permission to communicate through Windows Firewall, clear the check box in the Public or Private column to turn off access to public or private networks, respectively. If you clear both the Public and Private check boxes, then the check box by the name of the program is cleared as well. If you want Windows Firewall to block this application from connecting at all, you can just clear the check box by its name to turn off access on both kinds of network.

If the Windows Store app or desktop program you're looking for isn't already on the list, click or tap the Allow Another App button at the bottom of the page. In the Add an App dialog box, shown in Figure 18-7, you can see the other apps and programs you have installed.

If the app or program you want to allow through Windows Firewall isn't listed in the Add an App dialog box either, click or tap the Browse button to find the folder it's installed in. When you find the correct folder, click or tap the application file and then click or tap the Open button.

Again, you can choose which types of networks the application can communicate on by clicking or tapping the Network Types button; use the check boxes to select whether it can use private networks, public networks, or both.

When you finish adding the application, click or tap the Add button. Once you're finished making changes to the list, click or tap the OK button to save the changes and return to the Windows Firewall window. Now try launching the app or program you were having problems with and see if the problem has been solved.

Tip

If you want to see how much a Windows Store app or desktop program uses your network connection, look in Task Manager.

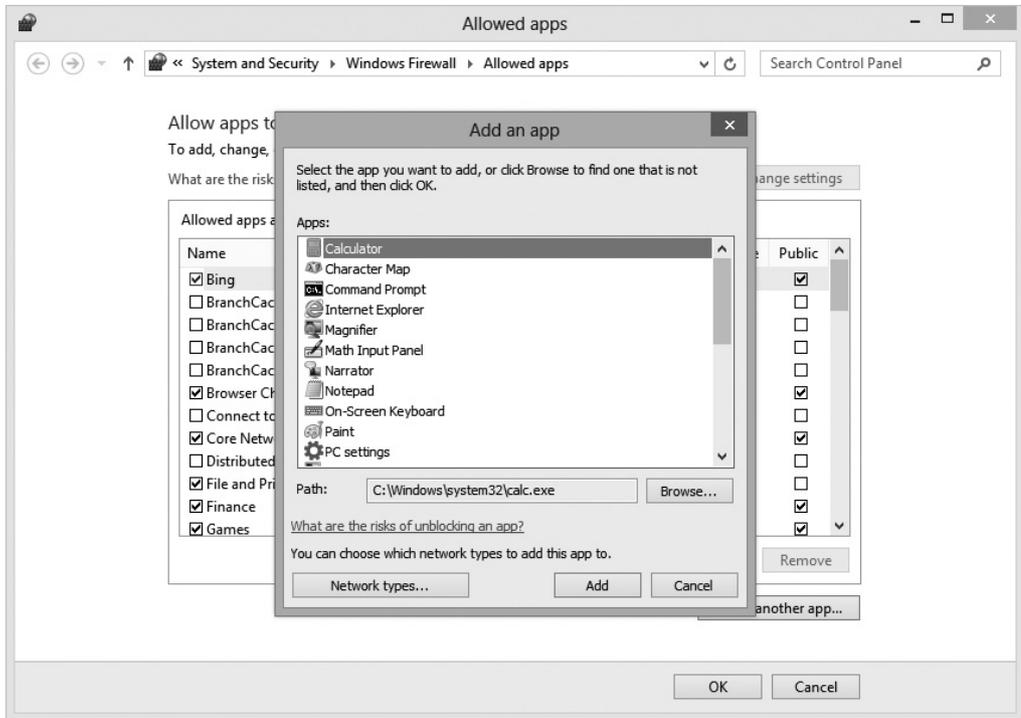


FIGURE 18-7 Select the app you want to add and then click or tap the Add button.

Solve Hardware Problems

If you're having problems with your PC hardware or a peripheral you're trying to use, some common problems are caused by hardware that isn't set up properly. Start by checking that everything is plugged in correctly and turned on.

If the tools we've looked at already can't help, or if the results point to your hardware, you need to find out whether the problem is that Windows isn't seeing the hardware device properly or whether it has a physical fault. Use these tools to find out.

Look in Devices and Printers

When you connect a peripheral like a scanner or printer to your PC, Windows looks in Windows Update for the correct driver to install. If it can't find it, your device won't work properly. Run the Hardware and Devices troubleshooter to look for devices that aren't correctly installed, or check the Devices and Printers control panel to see the status of a peripheral that isn't working properly.

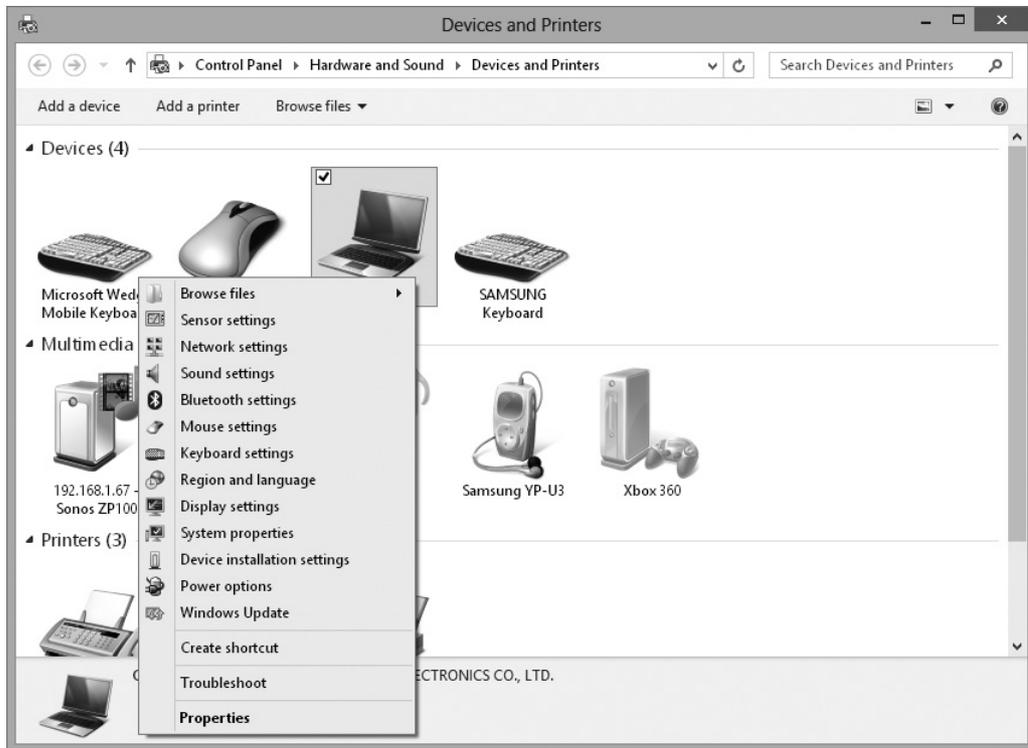
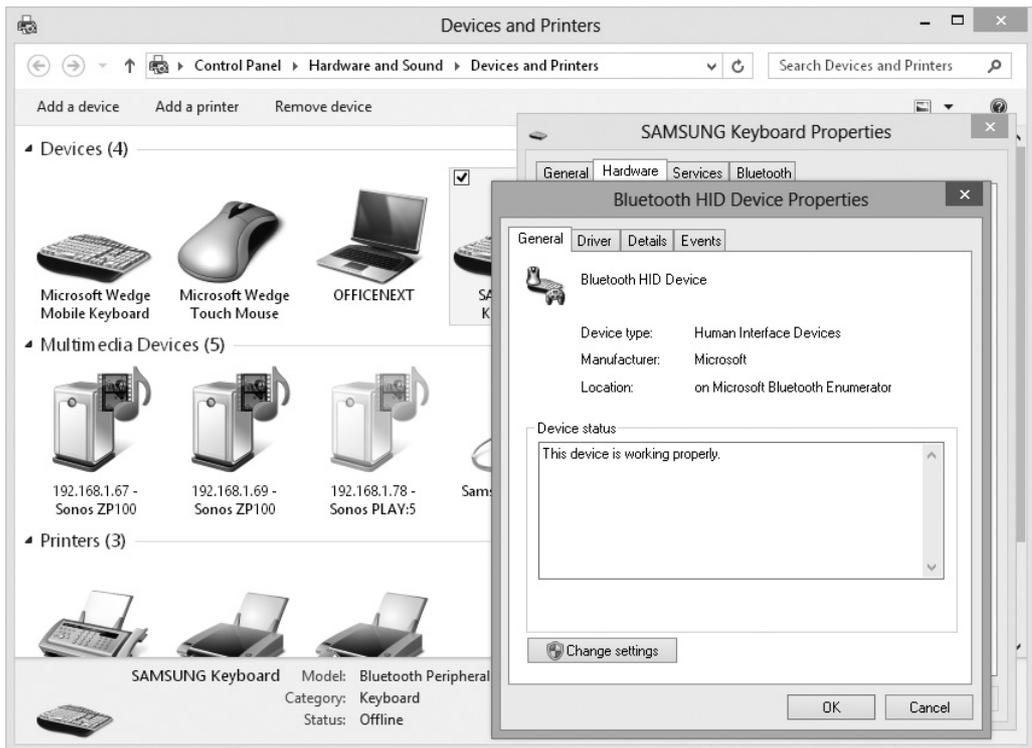


FIGURE 18-8 Devices and Printers shows your hardware and common functions.

To open Devices and Printers, in the Control Panel, click or tap View Devices and Printers under the Hardware and Sound heading. In Devices and Printers, right-click or press and hold the icon for your computer to see more options like Keyboard Settings and Sound Settings, as shown in Figure 18-8. If you do the same with a printer's icon, you can set print options or see the current print queue.

Any devices that Windows hasn't been able to install correctly will be marked with a yellow warning icon. Right-click or tap and hold on the device and choose Troubleshoot or Properties, if you want to see more technical details.

The Properties dialog box has two tabs; the General tab shows the make and model of your device, and the Hardware tab shows which functions the device has and whether it's working correctly. Click or tap Properties here as well to open a second dialog box with more options. Select the Driver tab to see which driver (if any) is installed. If you have a new driver from the manufacturer, click or tap Update Driver to install it or use Roll Back Driver to revert to a previous version. If Windows didn't detect the device correctly, click or tap Uninstall to remove the device so you can try setting it up again.

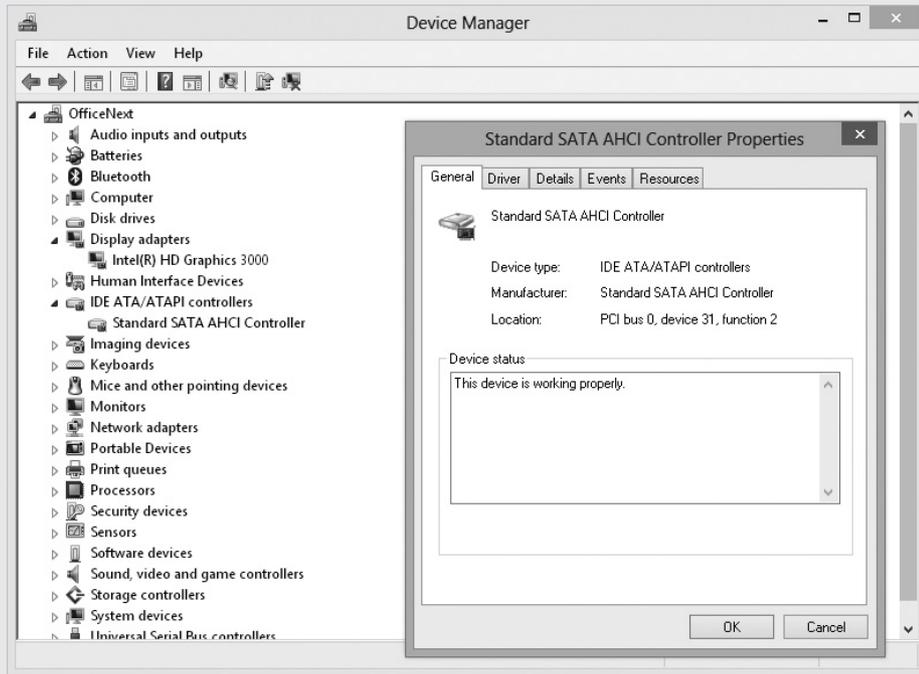


Diagnose Memory Problems

If Windows 8 detects problems with your PC that might indicate faults with the memory that's installed, it will display a message suggesting you run the Memory Diagnostics Tool. Click or tap Restart Now and Check for Problems, and then wait

Did You Know?**You Can See More Hardware in Device Manager**

You can see the same details for more devices in Device Manager, including your notebook battery, the CPU, and even USB ports and drive connections. In the Control Panel, choose Hardware and Sound, then click or tap Device Manager. Again, any devices that aren't working correctly will be marked with a yellow warning icon.



Choose **View | Show Hidden Devices** to see information about peripherals that you've used before but that aren't currently connected to your computer.

while your PC restarts and the tool checks the memory in your PC. If the tool reports errors, you should contact your PC maker for help because this usually means you have a hardware fault. If you suspect you have hardware problems but Windows hasn't asked to run this utility, you can search for it in the Control Panel and run it yourself.