

A+ Guide to Managing & Maintaining Your PC, 8th Edition























Chapter 12 *Troubleshooting Windows and Applications*










Objectives











- Learn about Windows tools to help you when troubleshooting Windows and application problems
- Learn about general strategies and steps you can take to troubleshoot and solve any computer problem
- Learn how to troubleshoot blue screen stop errors and improper shutdowns
- Learn how to troubleshoot problems with applications











Overview of Windows Troubleshooting Tools

- Refer to Table 12-1 on pages 558-562 for a quick reference of the many troubleshooting tools offered in Windows

Tool	Description
<p>Action Center</p>  <p>Windows 7</p>	<ul style="list-style-type: none"> ▲ Accessed from the System window or Action Center flag in the taskbar. ▲ Use it to solve problems when installing a device or application, to solve problems with software or hardware, and to get a history of past and current problems.
<p>Advanced Boot Options Menu</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ Accessed by pressing the F8 key when Windows first starts to load. ▲ Use several options on this menu to help you troubleshoot boot problems. ▲ In XP, the menu is called the Boot Options Menu.
<p>Backup and Restore</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ Accessed from the Start menu. In Windows 7, use it to back up and restore user data and the system image and to make a rescue disc. ▲ In Vista, the tool is called the Backup and Restore Center. Use it to back up and restore data and make a Complete PC Backup. ▲ In XP, the program name is ntbackup.exe. Use it to back up and restore data and the system state.
<p>Chkdsk (Chkdsk.exe)</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ At a command prompt, enter Chkdsk with parameters. ▲ Use it to check and repair errors on a drive. If critical system files are affected by these errors, repairing the drive might solve a startup problem.
<p>Cipher (Cipher.exe)</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ At a command prompt, enter Cipher with parameters. ▲ Log in as an administrator and use this command to decrypt a file that is not available because the user account that encrypted the file is no longer accessible.
<p>Compatibility Mode</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ Accessed from the Action Center or the program file's shortcut menu. Use it to resolve issues that prevent legacy applications or drivers from working. ▲ Vista calls the tool the Program Compatibility Wizard.
<p>Component Services</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ A tool in the Administrative Tools list in Control Panel. ▲ Registers a component of an application with the system.
<p>Computer Management (Compmgmt.msc)</p>    <p>Windows 7 Windows Vista Windows XP</p>	<ul style="list-style-type: none"> ▲ Accessed from Control Panel, or you can enter Compmgmt.msc at a command prompt. ▲ Use it to access several snap-ins to manage and troubleshoot a system.

Tool	Description
<p>Data Sources (ODBC)</p> 	<ul style="list-style-type: none"> ▲ A tool in the Administrative Tools list in Control Panel. ▲ Installs drivers so that an application can open a foreign data source.
<p>Device Driver Roll Back</p> 	<ul style="list-style-type: none"> ▲ Accessed from Device Manager. ▲ Use it to replace a driver with the one that worked before the current driver was installed.
<p>Device Manager (Devmgmt.msc)</p> 	<ul style="list-style-type: none"> ▲ Accessed from the System window or XP System Properties window. ▲ Use it to solve problems with hardware devices, to update device drivers, and to disable and uninstall a device.
<p>Disk Cleanup (Cleanmgr.exe)</p> 	<ul style="list-style-type: none"> ▲ Accessed from a drive's properties box or by entering cleanmgr at a command prompt. ▲ Use it to delete unused files to make more disk space available. Not enough free hard drive space can cause boot problems.
<p>Disk Defragmenter (Dfrg.msc or Defrag.exe)</p> 	<ul style="list-style-type: none"> ▲ Accessed from a drive's properties box, or use Defrag.exe with parameters at a command prompt. ▲ Use it to defragment a volume on a magnetic hard drive to improve performance.
<p>Disk Management (Diskmgmt.msc)</p> 	<ul style="list-style-type: none"> ▲ Accessed from the Computer Management console, or enter Diskmgmt.msc at a command prompt. ▲ Use it to view and modify partitions on hard drives and to format drives.
<p>File Signature Verification Tool (Sigverif.exe)</p> 	<ul style="list-style-type: none"> ▲ At a command prompt, enter Sigverif with parameters. ▲ The tool searches for installed drivers that are unsigned and stores results in \Windows\sigverif.txt. ▲ When a device driver or other software is giving problems, use it to verify that the software has been approved by Microsoft.
<p>Driver Verifier (verifier.exe)</p> 	<ul style="list-style-type: none"> ▲ Enter verifier.exe at a command prompt. ▲ Use it to identify a driver that is causing a problem. The tool puts stress on selected drivers, which causes the driver with a problem to crash. ▲ The tool can be used to solve system lock-up errors or blue screen errors caused by a corrupted I/O device driver.
<p>Error Reporting or Archived Messages</p> 	<ul style="list-style-type: none"> ▲ This automated Windows service displays error messages when an application error occurs. In Windows 7, see these messages in the Action Center. ▲ Windows 7 and Vista keep a history of past problems and solutions, but XP does not. ▲ Vista calls the tool Problem Reports and Solutions.

Tool	Description
<p>Event Viewer (Eventvwr.msc)</p> 	<ul style="list-style-type: none"> ▲ Accessed from the Computer Management console or in Administrative Tools. ▲ Check the Event Viewer logs for error messages to help you investigate all kinds of hardware, security, and system problems.
<p>Group Policy (Gpedit.msc)</p> 	<ul style="list-style-type: none"> ▲ At a command prompt, enter Gpedit.msc, or use the Computer Management console. Only available in Business and Professional editions of Windows. ▲ Use it to display and change policies controlling users and the computer.
<p>Last Known Good Configuration</p> 	<ul style="list-style-type: none"> ▲ Press F8 at startup and select from the Advanced Boot Options menu. ▲ Use this tool when Windows won't start normally and you want to revert the system to before a Windows setting, driver, or application that is causing problems was changed.
<p>Memory Diagnostics (mdsched.exe)</p> 	<ul style="list-style-type: none"> ▲ Enter mdsched.exe in a command prompt window or find it on the System Recovery Options menu after booting the computer into the Windows Recovery Environment (Windows RE). ▲ Use it to test memory.
<p>Network and Sharing Center</p> 	<ul style="list-style-type: none"> ▲ Accessed from the taskbar or Control Panel. ▲ Centralized location to manage network connections and network security.
<p>Performance Monitor (Perfmon.msc)</p> 	<ul style="list-style-type: none"> ▲ At a command prompt, enter Perfmon.msc. Use it to view information about performance to help you identify a performance bottleneck. ▲ Vista embeds the tool in the Reliability and Performance Monitor window.
<p>Programs and Features window</p> 	<ul style="list-style-type: none"> ▲ Accessed from Control Panel. ▲ Use it to uninstall, repair, or update software or certain device drivers that are causing a problem. ▲ XP calls the tool the Add or Remove Programs window.
<p>Registry Editor (Regedit.exe)</p> 	<ul style="list-style-type: none"> ▲ At a command prompt, enter regedit. ▲ Use it to view and edit the registry.
<p>Reliability Monitor</p> 	<ul style="list-style-type: none"> ▲ Accessed in Windows 7 by way of the Action Center, and in Vista, find it in the Reliability and Performance Monitor window. ▲ Use it to get a history of past problems with a computer.
<p>Resource Monitor (Resmon.exe)</p> 	<ul style="list-style-type: none"> ▲ Accessed from Windows 7 Task Manager or Action Center. In Vista, find it in the Reliability and Performance Monitor window. ▲ Use it to view performance of the CPU, memory, hard drive, and network.

Tool	Description
<p>Runas (Runas.exe)</p> 	<ul style="list-style-type: none"> At a command prompt, enter Runas with parameters, or press shift-right-click and choose <i>Run as administrator</i> or <i>Run as different user</i> from the shortcut menu. Use it to run a program using different permissions from those assigned to the currently logged-on user.
<p>Safe Mode</p> 	<ul style="list-style-type: none"> At startup, press F8 and select the option from the Advanced Boot Options menu. Use it when Windows does not start or starts with errors. Safe Mode loads the Windows desktop with a minimum configuration. In this minimized environment, you can solve a problem with a device driver, display setting, or corrupted or malicious applications.
<p>SC (Sc.exe)</p> 	<ul style="list-style-type: none"> At a command prompt, enter Sc with parameters. Use it to stop or start a service that runs in the background.
<p>Services (Services.msc)</p> 	<ul style="list-style-type: none"> At a command prompt, enter Services.msc. Graphical version of SC.
<p>Software Explorer</p> 	<ul style="list-style-type: none"> Accessed from the Windows Defender window. Use it to view and change programs launched at startup.
<p>System Configuration (Msconfig.exe)</p> 	<ul style="list-style-type: none"> Enter Msconfig.exe in the Search box. Troubleshoot the startup process by temporarily disabling startup programs and services.
<p>System File Checker (Sfc.exe)</p> 	<ul style="list-style-type: none"> At a command prompt, enter Sfc with parameters. Use it to verify the version of all system files when Windows loads. Useful when you suspect system files are corrupted, but you can still access the Windows desktop.
<p>System Information (Msinfo32.exe)</p> 	<ul style="list-style-type: none"> Enter Msinfo32.exe in the Search box. Use it to display information about hardware, applications, and Windows.
<p>System Information (Systeminfo.exe)</p> 	<ul style="list-style-type: none"> At a command prompt, enter Systeminfo. A text-only version of the System Information window. To direct that information to a file, use the command Systeminfo.exe >Myfile.txt. Later the file can be printed and used to document information about the system.
<p>System Restore (Rstrui.exe)</p> 	<ul style="list-style-type: none"> Accessed from the Start menu, when loading Safe Mode, or from the System Recovery Options menu after booting the computer into Windows RE. Use it to restore the system to a previously working condition called a restore point; it restores the registry, some system files, and some application files. Restore points are automatically created when Windows System Protection is turned on.









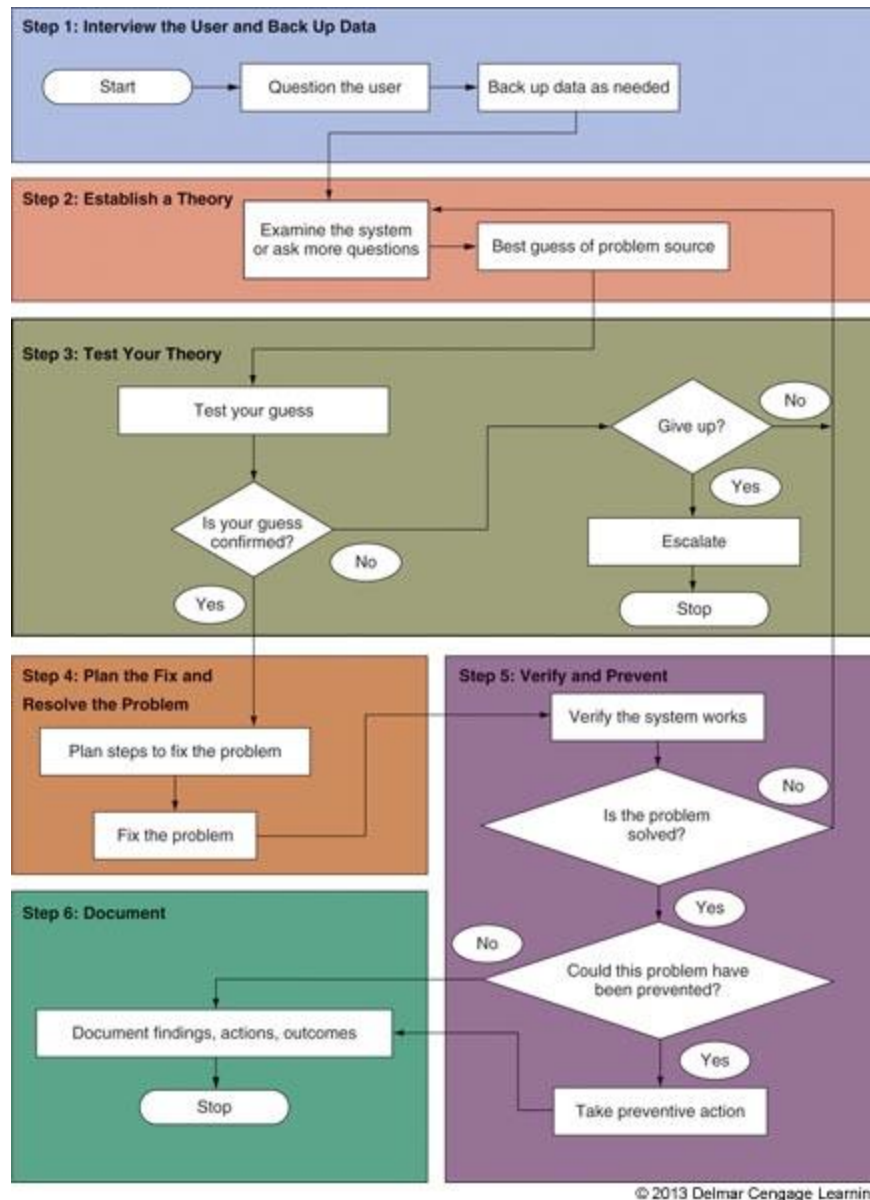
Tool	Description
Task Killing Utilities (Tskill.exe or Taskkill.exe) 	<ul style="list-style-type: none"> ▲ At a command prompt, enter Taskkill or Tskill with parameters. Tskill is available only in business and professional editions of Windows. ▲ Use it to stop or kill a process or program currently running. Useful when managing background services such as an email server or web server.
Task Lister (Tasklist.exe) 	<ul style="list-style-type: none"> ▲ At a command prompt, enter Tasklist. ▲ Use it to list currently running processes similar to the list provided by Task Manager.
Task Manager (Taskman.exe) 	<ul style="list-style-type: none"> ▲ Right-click the taskbar and select Start Task Manager. ▲ Use it to list and stop currently running processes. ▲ Useful when you need to stop a locked-up application.
Windows Defender 	<ul style="list-style-type: none"> ▲ Accessed from Control Panel. ▲ Monitors activity and alerts you if a running program appears to be malicious or damaging the system.
Windows File Protection 	<ul style="list-style-type: none"> ▲ Windows service that runs in the background to protect system files and restore overwritten system files as needed.
Windows Firewall 	<ul style="list-style-type: none"> ▲ Service that runs in the background to prevent or filter uninvited communication from another computer.
Windows Update (Wupdmgr.exe) 	<ul style="list-style-type: none"> ▲ Accessed from the Start menu. ▲ Use it to update Windows by downloading the latest patches from the Microsoft web site.
Windows XP Mode 	<ul style="list-style-type: none"> ▲ Download and install on Windows 7 Professional and Ultimate editions to run legacy applications that won't work using Compatibility mode.

Table 12-1 Windows 7/Vista/XP maintenance and troubleshooting tools (continued)

© Cengage Learning 2014

Strategies To Troubleshoot Any Computer Problem

- Should first approach the problem as an investigator
 - Be careful not to compound the problem through actions before discovering as much as you can about the problem
- Ask questions until you understand the source of the problem
- A systematic method used by most expert troubleshooters is introduced in this chapter
 - Refer to the diagram on the next slide and on page 217 of the text



© 2013 Delmar Cengage Learning

Figure 12-1 General approach to problem solving

Strategies To Troubleshoot Any Computer Problem

- There are 13 rules introduced throughout the chapter that might be useful when troubleshooting
- Here is **Troubleshooting Rule #1**: Approach the Problem Systematically
 - Start at the beginning and walk through it carefully
 - If you find more than one problem on the same computer, work on only one problem at a time
 - Trying to solve more than one at a time can get very confusing

Step 1: Interview the User and Back Up Data

- Some possible questions to ask:
 - Please describe the problem. What error messages, unusual displays, or failures did you see?
 - When did the problem start?
 - What was the situation when the problem occurred?
 - What programs or software were you using?
 - What changes have recently been made to the system?
 - Has there been a recent thunderstorm or electrical problem?

Step 1: Interview the User and Back Up Data

- Some possible questions to ask (cont'd):
 - Have you made any hardware, software, or configuration changes?
 - Has someone else used your computer recently?
 - Is there some valuable data on your system that is not backed up that I should know about before I start working on the problem?
 - Can you show me how to reproduce the problem?

Step 1: Interview the User and Back Up Data

- **Troubleshooting Rule #2: Establish Your Priorities**
 - Decide what your first priority is
 - When practical, ask user for help deciding priorities
- **Troubleshooting Rule #3: Beware of User Error**
 - If you suspect this, ask user to show you the problem and watch what the user is doing
- **Troubleshooting Rule #4: Keep Your Cool and Don't Rush**
 - A wrong move can be costly – carefully plan your moves and research the problem

Step 1: Interview the User and Back Up Data

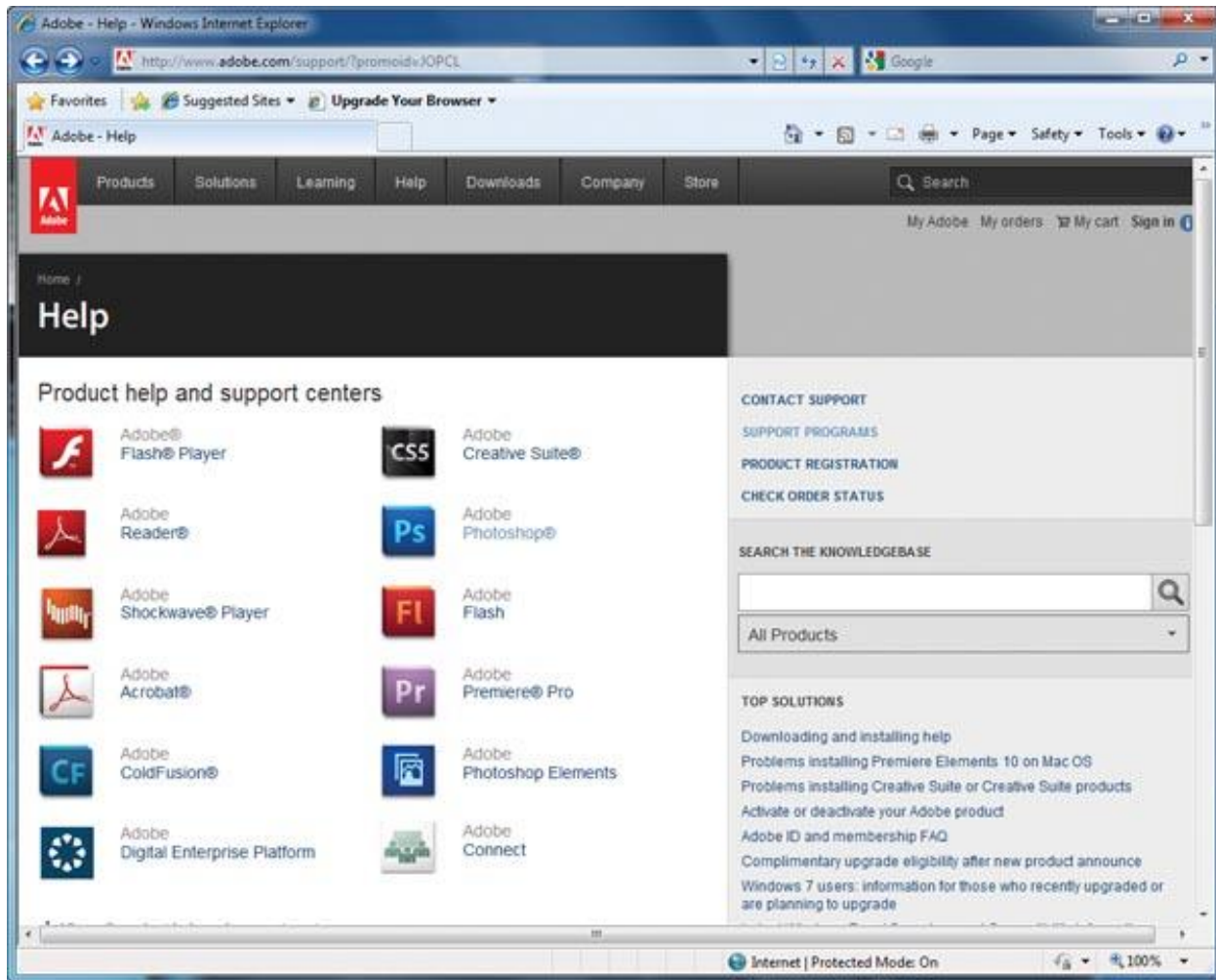
- Back up any important data that is not currently backed up before you begin working
 - If computer won't boot to Windows desktop, use Windows Explorer to copy files to a flash drive
 - If Windows Explorer can't be used
 - Remove the hard drive and connect to a USB port on another computer
 - Copy the data to the other computer

Step 2: Examine The System and Make Your Best Guess

- **Troubleshooting Rule #5: Make No Assumptions**
 - Hardest rule to follow
 - Do your own investigating after the user tells you about the problem
- **Troubleshooting Rule #6: Try the Simple Things First**
 - Most problem are easy to fix
 - Check simple things first
 - Example: if USB drive is not working, verify the drive works on another computer before verifying drivers

Step 2: Examine The System and Make Your Best Guess

- Follow this process to form best theory and test:
 - Reproduce the problem and observe for yourself what the user described
 - Decide if the problem is hardware or software related
 - Make your best guess as to the source of the problem
 - Example: if video does not work, a best guess is the monitor cables are loose or the monitor is turned off
- **Troubleshooting Rule #7: Become a Researcher**
 - Search the web, ask questions, read documentation, make phone calls



© 2013 Delmar Cengage Learning

Figure 12-2 Search the manufacturer web sites for help with a hardware or software product

Step 3: Test Your Theory

- Example of a test:
 - Video does not work and you suspect loose cables
 - Check the connection and discover that it is loose
 - Connect it securely and problem is solved
- Example that includes testing an incorrect guess:
 - CD drive won't read a CD, suspect a scratched CD
 - CD looks fine, no scratch
 - Next guess, CD drive is not recognized by Windows
 - Check Device Manager and it reports errors
 - Next guess, drivers are corrupted

Step 3: Test Your Theory

- **Troubleshooting Rule #8: Divide and Conquer**
 - Isolate the problem – Remove one hardware or software component after another until the problem is isolated
 - Try the following:
 - In Windows, stop all nonessential services running in the background
 - Boot from a bootable CD or DVD to eliminate OS on the hard drive
 - Start Windows in Safe Mode to eliminate unnecessary startup programs

Step 3: Test Your Theory

- **Troubleshooting Rule #9: Write Things Down**
 - Take notes, draw diagrams, make lists
- **Troubleshooting Rule #10: Don't Assume the Worst**
 - When working with a hard drive that is not working, don't assume that data is lost
- **Troubleshooting Rule #11: Reboot and Start Over**
 - Take a break, walk away from the problem
 - Come back and begin again

Step 4: Plan Your Solution and Then Fix the Problem

- **Troubleshooting Rule #12:** Use the Least Invasive Solution First
 - Fix the problem so that the system returns to normal working condition with the least amount of effort
- **Troubleshooting Rule #13:** Know Your Starting Point
 - Find out what works and doesn't work before you take anything apart

Step 4: Plan Your Solution and Then Fix the Problem

- Plan your solution and fix the problem:
 - Consider different solutions and select the least invasive one
 - Before applying your solution, determine what works and what doesn't work
 - Fix the problem

Step 5: Verify the Fix and Take Preventative Action

- After problem is fixed:
 - Reboot the system and verify all is well
 - Have the user check everything and verify also
 - Ask yourself this question: Could this problem have been prevented?
 - If so, instruct the user on what to do, set Widows to automatically install updates, etc...

Step 6: Document What Happened

- Reasons to document:
 - Help when troubleshooting the next situation
 - Train others
 - Develop effective preventative maintenance plans
 - Satisfy any audits or employer queries about your work
- Many companies use Help Desk Software to record this information

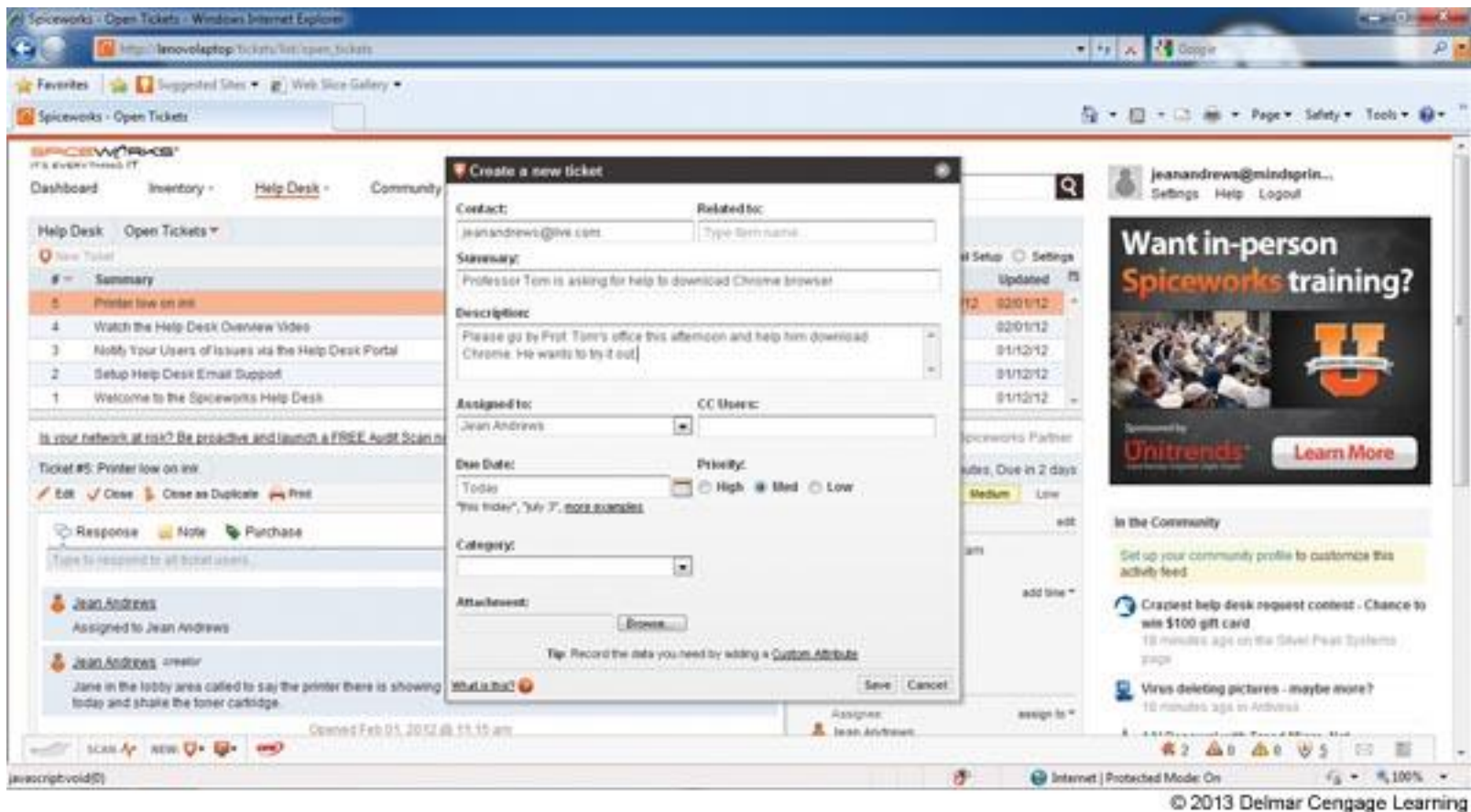


Figure 12-5 Help Desk Software allows you to create, edit, and close tickets used by technicians

Troubleshooting Blue Screen Errors and Improper Shutdowns

- Blue screen error: happens when processes running in kernel mode encounter a problem and Windows must stop
 - Also known as a stop error or blue screen of death (BSOD)
- A stop error at the top and the specific number of the error at the bottom will help with troubleshooting

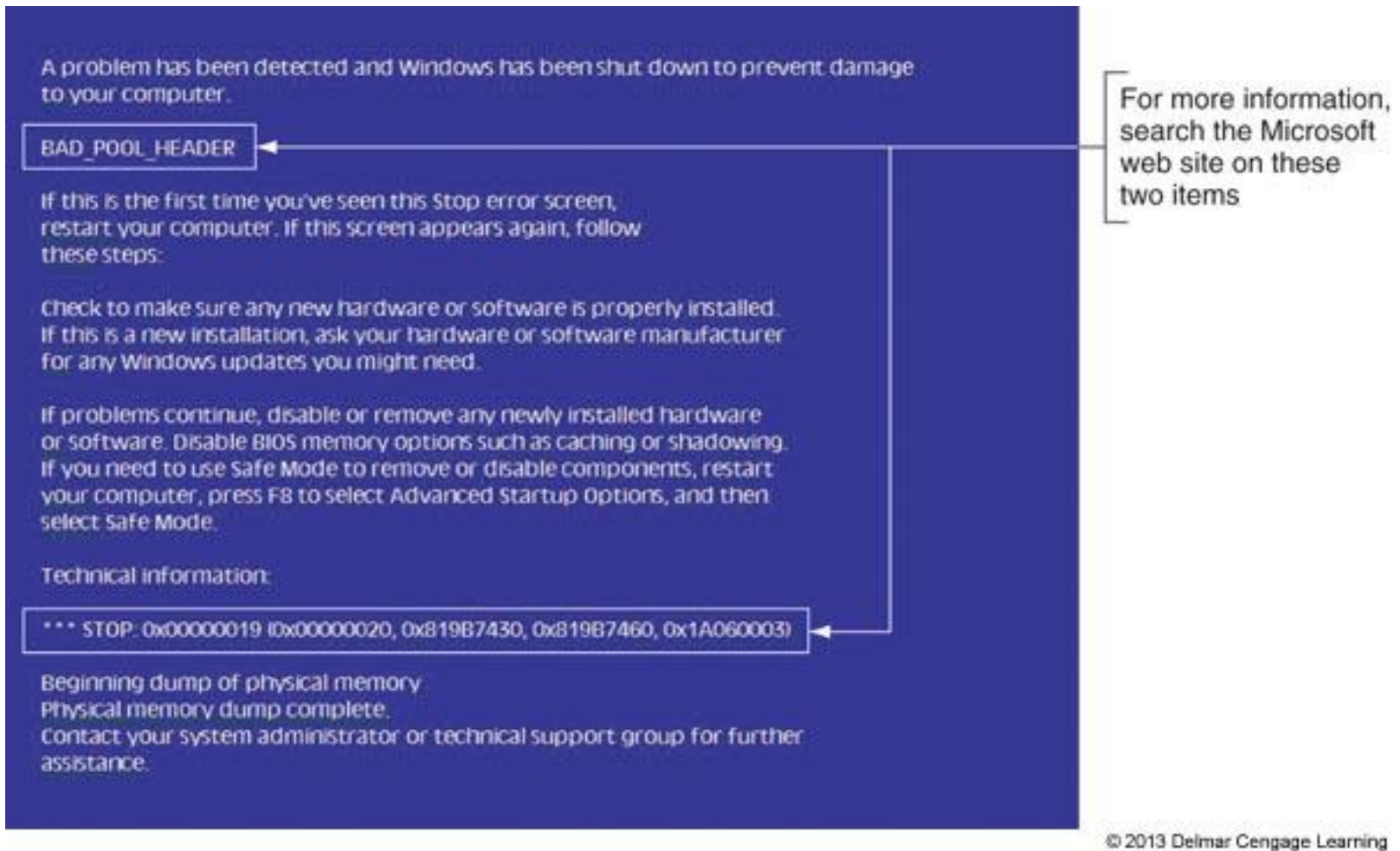


Figure 12-6 A blue screen of death (BSOD) is definitively not a good sign

Troubleshooting Blue Screen Errors and Improper Shutdowns

- How to deal with blue screen errors after startup:
 - Search the Microsoft web site
 - If a device driver or service that caused the problem is listed, use Windows Explorer to locate the program file
 - You can try to reinstall the device or program
 - After a restart, a Windows error message box might appear with useful information
 - Check Event Viewer
 - Check Archived Messages in the Action Center
 - In Vista, check Problem Reports and Solutions window

Troubleshooting Blue Screen Errors and Improper Shutdowns

- How to deal with blue screen errors after startup (cont'd):
 - Use Windows Updates to apply patches
 - Undo any recent changes
 - If unsure which changes to undo, consider using System Restore
 - Use Memory Diagnostics tool to check memory
 - Use Chkdsk /r to check the hard drive for errors

Troubleshooting Blue Screen Errors and Improper Shutdowns

- Common blue screen errors:
 - BAD_POOL_HEADER – could occur for a variety of reasons such as a corrupted Windows update, bad memory, or a corrupted application
 - NTFS_FILE_SYSTEM – hard drive might be corrupted
 - KERNEL_DATA_INPAGE_ERROR – could not read the paging file
 - UNEXPECTED_KERNEL_MODE_TRAP – most likely caused by bad memory
 - DIVIDE_BY_ZERO_ERROR – most likely caused by an application

Windows 32-Bit and 64-Bit Patches

- Must get a 32-bit patch for a 32-bit installation of Windows, a device driver, or an application
- For a 64-bit installation of Windows:
 - Must get a 64-bit device driver
 - An application could be a 32-bit or 64-bit application
- Guidelines when reading error messages:
 - The term x86 refers to 32-bit CPUs and operating systems
 - All CPUs in PCs today are hybrid processors
 - The term x86-64 refers to these processors and also may refer to a 64-bit OS

Windows 32-Bit and 64-Bit Patches

- Guidelines when reading error messages (cont'd):
 - The term IA64 refers to 64-bit Intel processors
 - The term x64 refers to 64-bit operating systems

Memory Diagnostics

- Identifies problem with memory
- Eliminates memory as problem source
- Use one of these methods to start the utility
 - Command Prompt window command: **mdsched.exe**
 - If Windows desktop will not load, press Spacebar during the boot
 - Select **Windows Memory Diagnostic** from the Windows Boot Manager screen
 - If you cannot boot from the hard drive, boot from the Windows setup DVD
 - Click **Repair your computer** then click **Windows Memory Diagnostic**

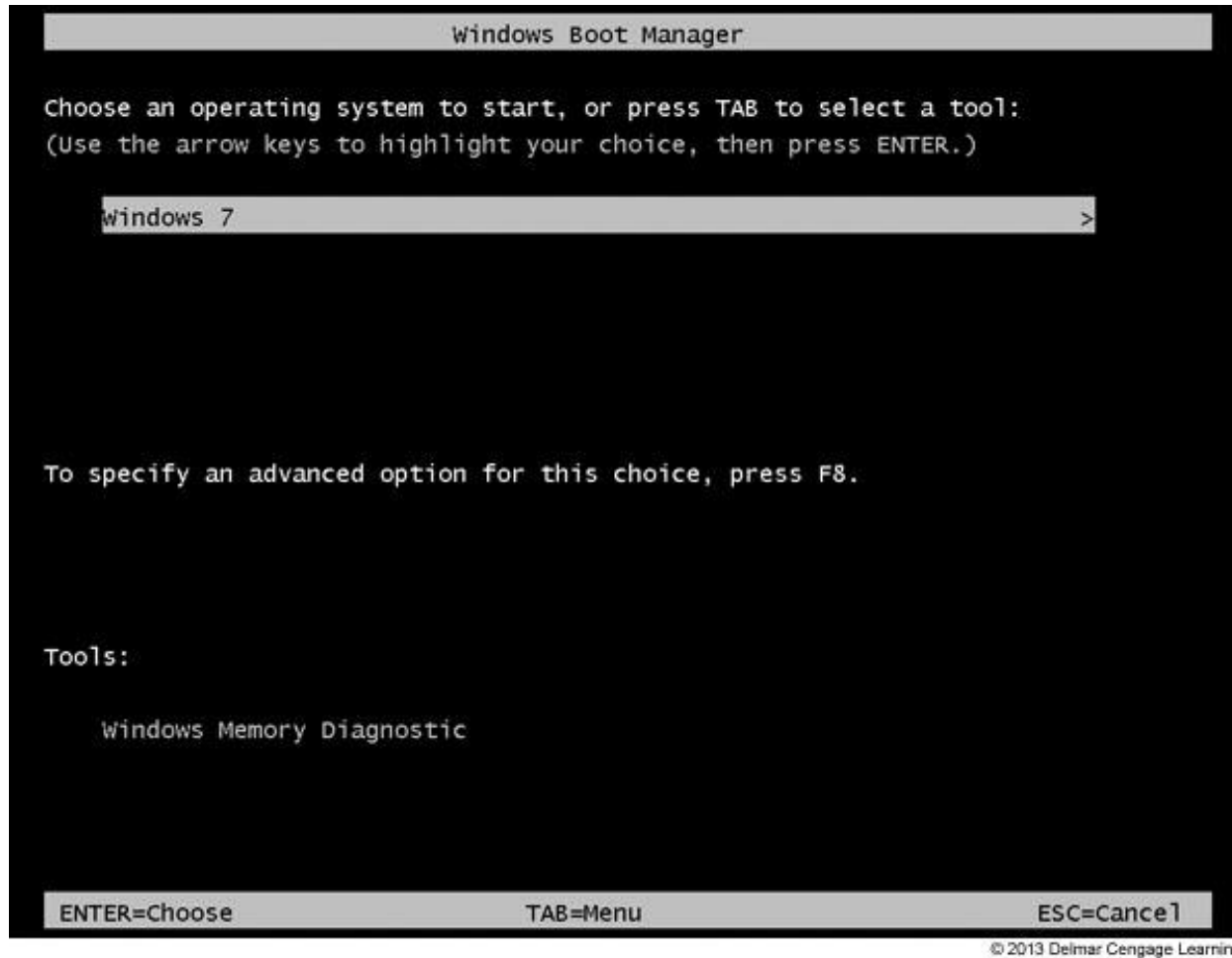


Figure 12-9 Force the Windows Boot Manager menu to display by pressing the Spacebar during the boot



Figure 12-10 Opening menu when you boot from the Windows 7 setup DVD

System File Checker

- System file checker (SFC)
 - SFC protects system files and keeps cache current
 - Can refresh a damaged file
 - Run SFC in elevated command prompt window: **sfc /scannow**
 - If corrupted system files are found, might need the Windows setup DVD to restore files
 - If SFC won't run using the above command, try the command **sfc /scanonce**
 - Will scan files immediately after the next reboot

Dealing with Improper Shutdowns

- Hardware that can cause these errors:
 - Memory, motherboard, CPU, video card, or the system overheating
- When these error occur:
 - Check Event Viewer – look for hardware failure
 - Apply any Windows patches
 - Use Memory Diagnostics and Chkdsk /r
 - If overheating is suspected, go into BIOS setup and check the temperature of the CPU
 - Should not exceed 38 degrees C

Dealing With Endless Shutdowns and Restarts

- If caught in an endless cycle of restarts:
 - Boot into Safe Mode where you can change the Windows setting to control automatic restarts

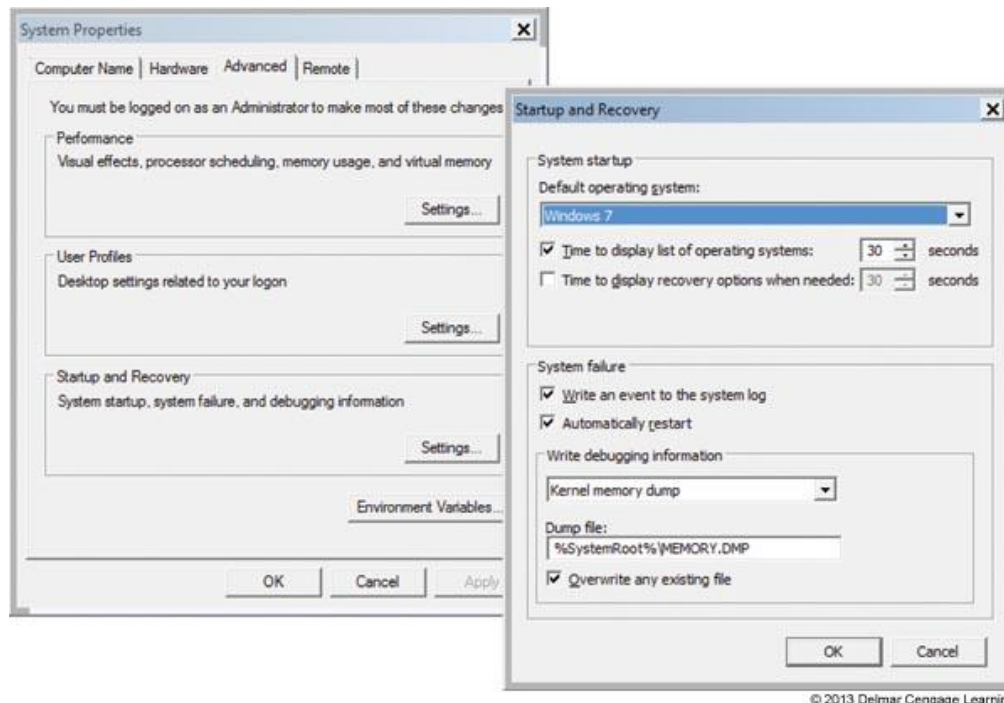


Figure 12-15 Use the Startup and Recovery box to change the way Windows responds to a stop error

Troubleshooting Applications

- Problems with an application might be caused by:
 - The application
 - Hardware
 - The operating system
 - Data
 - Other applications in conflict with the application
 - User

General Steps For Solving Application Errors

- Step 1: Interview the User and Back Up Data
 - Ask the user to reproduce the problem while you watch
 - Try a reboot
- Step 2: Error Messages, The Web, and Logs Might Help
 - Check Windows 7 Action Center
 - Check Vista Problem Reports and Solutions window
 - For XP error dialog boxes, click Send Error Report and follow links to find out more information

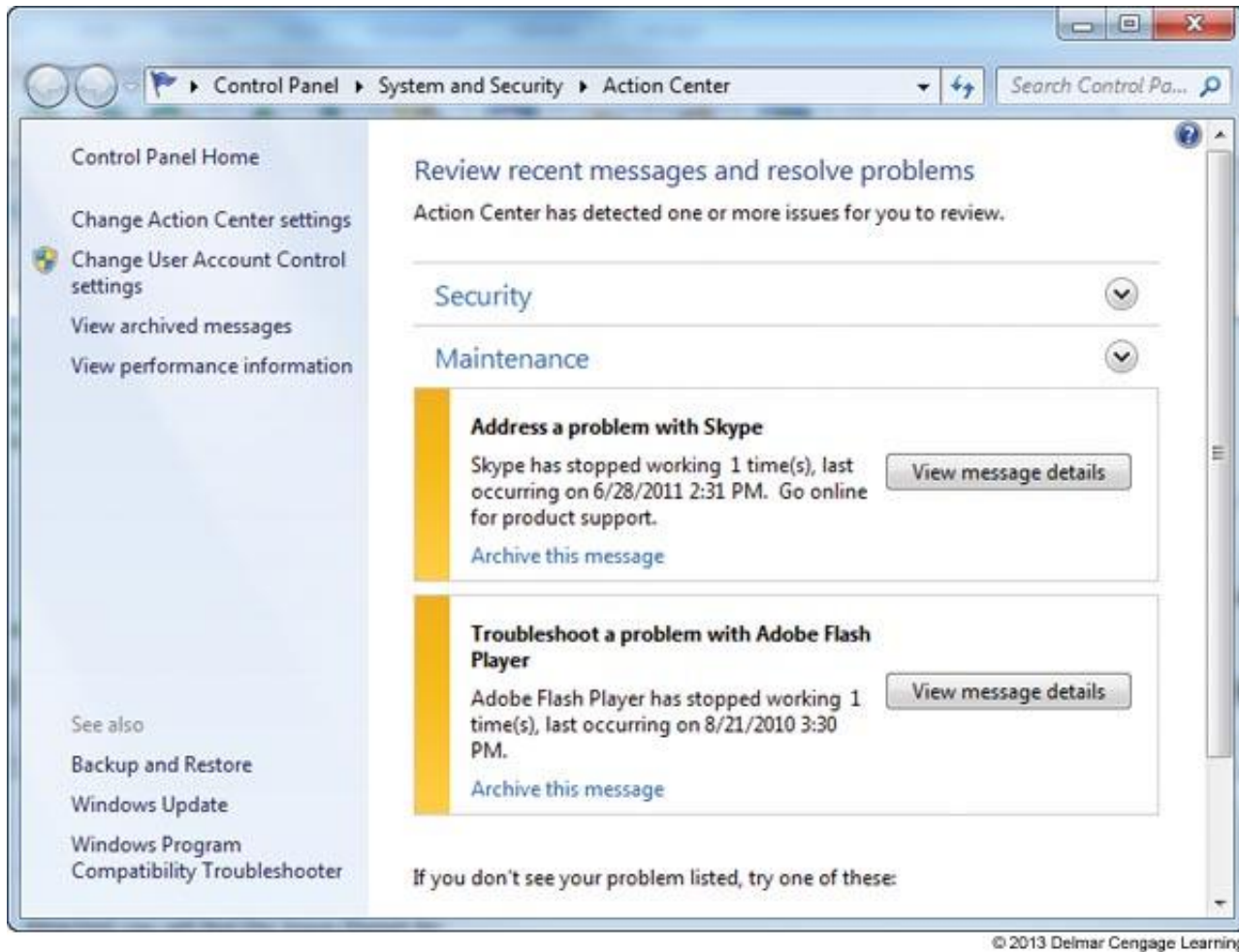


Figure 12-16 Windows 7 reports problems with two applications

General Steps For Solving Application Errors

- Step 2: Error Messages, The Web, and Logs Might Help (cont'd):
 - Search the web for help
 - Use Event Viewer and Reliability Monitor to look for clues
- Step 3: Consider the Data or the Application is Corrupted
 - Application settings might be wrong
 - Uninstall and reinstall the application

General Steps For Solving Application Errors

- Step 4: Consider Outside Interference
 - Suspect a virus
 - System resources might be low
 - Another application might be interfering
 - A service may have failed to start
 - Bad memory
 - Corrupted hard drive
 - A background program might be conflicting with the application

General Steps For Solving Application Errors

- Step 5: Consider Windows Might Be the Problem
 - A problem with an application might be solved by updating or restoring Windows system files
 - Download Windows updates
 - Use System File Checker to verify and replace system files
 - Use System Restore

Responding To Specific Error Messages

- **When An Application Hangs:**
 - Use Task Manager to end it
 - If Task Manager can't end it, use the Tasklist and Taskkill commands
 - Tasklist command returns the process identify (PID)
 - Taskkill command uses the process ID to kill the process
 - Example:
 - use `taskkill | more` to list running processes
 - Note the PID of the process you want to end (ex. 2212)
 - Enter `taskkill /f /pid:2212` to forcefully kill the process

Responding To Specific Error Messages

- **When a File Fails to Open**
 - The application is not installed or the file extension is wrong
 - A program associated with a file extension is called a **default program**
 - Use the Default Programs window to change the program associated with a file extension
- Data Sources Open Database Connectivity (ODBC) tool: can be used to allow data files to be connected to applications they normally would not use

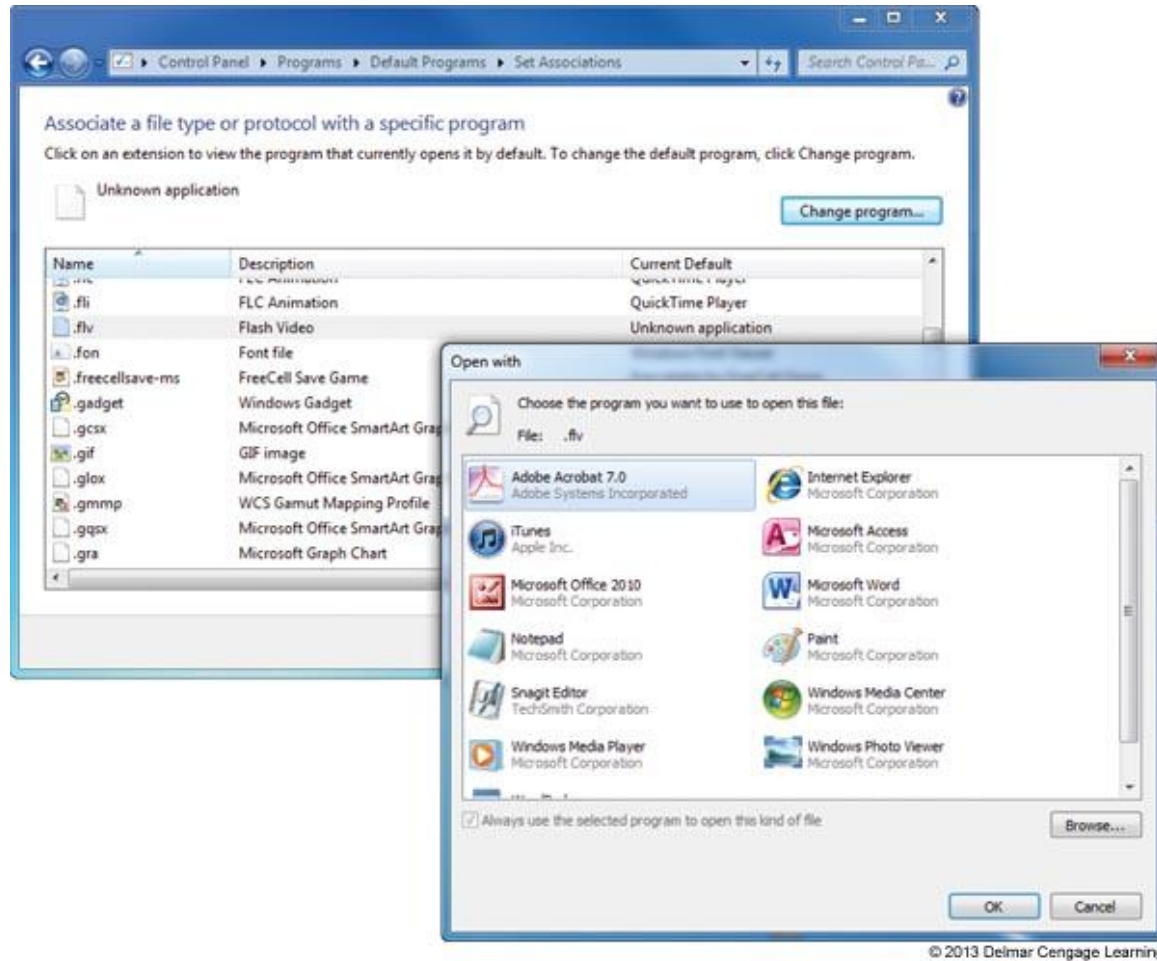


Figure 12-21 Select the default program to associate with a file extension

Responding To Specific Error Messages

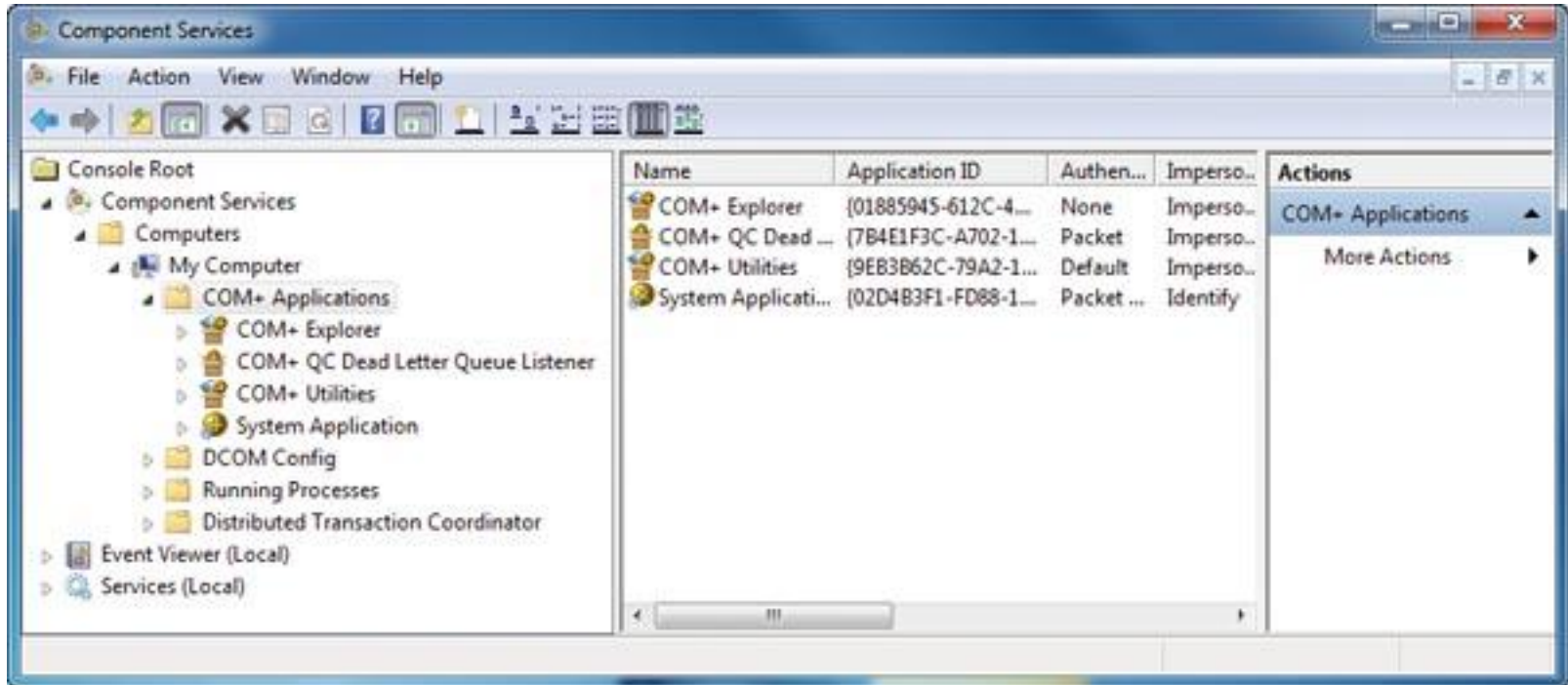
- **When a Service Fails to Start**
 - Can be caused by a corrupted or missing service program
 - Check the Service console to make sure the service is set to start automatically
 - Use the service's Properties box to find the path and filename to the executable program
 - Next, use Windows Explorer to make sure the program file is not missing

Responding To Specific Error Messages

- **When A DLL Is Missing or a Component Is Not Registered**
 - Most applications have many small programs called components that serve the main program
 - These small component services often have a .DLL extension (Dynamic Link Library)
 - When an error message appear about a missing DLL
 - Reinstall the application
 - Recover it from backup or from the application installation files

Responding To Specific Error Messages

- **When A DLL Is Missing or a Component Is Not Registered (cont'd)**
 - The relationship between the main program and the component might be broken
 - Use a Microsoft Management Console snap-in called Component Services (COM+) to register components
 - On older versions of Windows use the Regsvr32.exe program to register the component

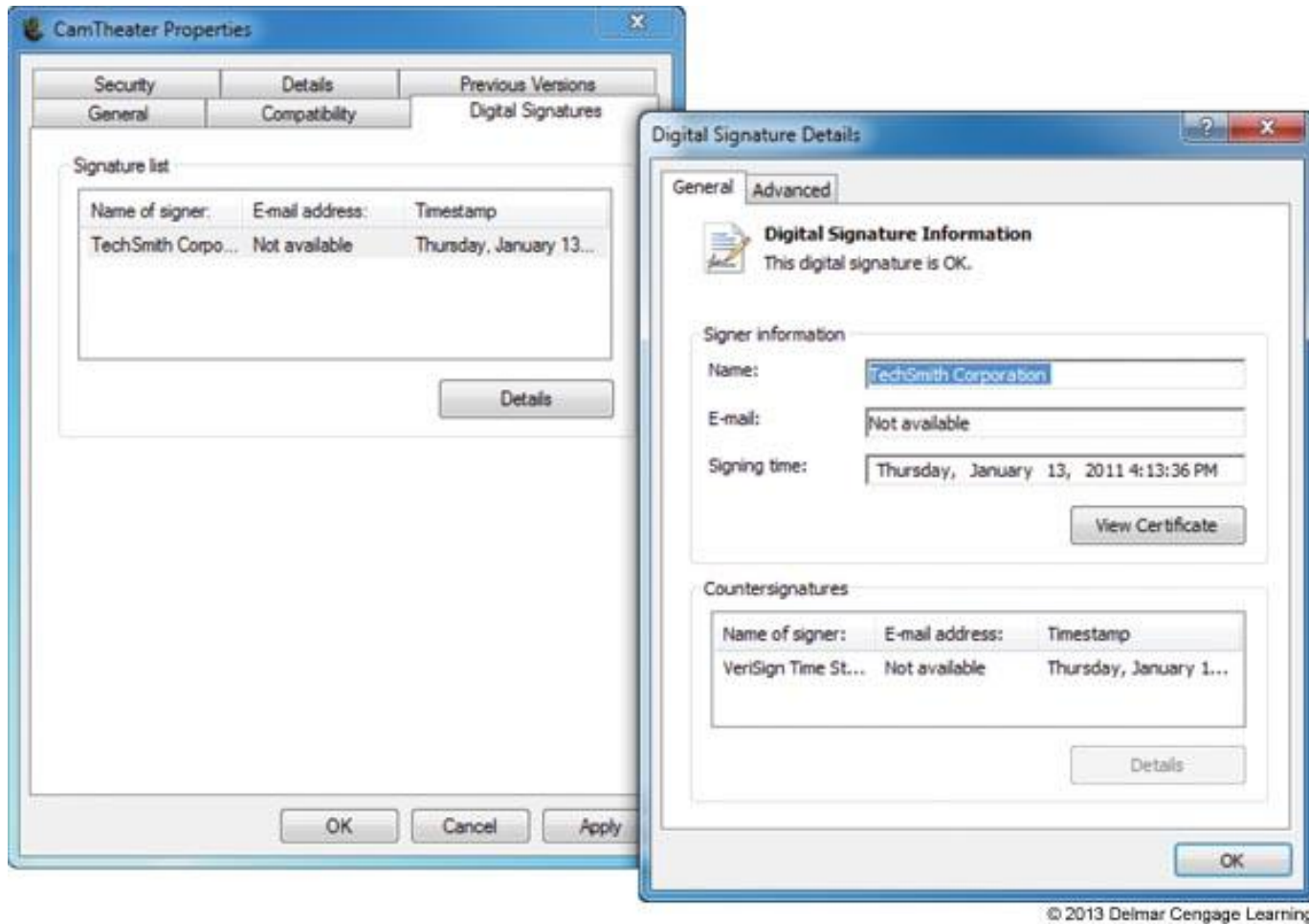


© 2013 Delmar Cengage Learning

Figure 12-26 Use the Component Services window to register components used by an application

Responding To Specific Error Messages

- **When the Application Has Never Worked**
 - Update Windows and search the web
 - Run the installation program or application as an administrator
 - Consider whether an older application is having compatibility problems with Windows
 - Verify that the application is digitally signed



© 2013 Delmar Cengage Learning

Figure 12-30 This program is digitally signed

Summary

- There are many Windows tools that can be used to help find a solution to a problem with a system
- Many technicians use a six step troubleshooting process to help them solve PC related problems
- To solve blue screen stop errors, use the web, Event Viewer, Windows updates, System Restore, Memory Diagnostics, and Chkdsk to examine the system and solve the problem
- Microsoft calls 32-bit OSs x86-based OSs and x64 applies to 64-bit OSs

Summary

- Use the System File Checker (SFC) tool to verify and restore system files
- Windows error messages and logs can help examine a system looking for the source of an application problem
- Applying Windows patches and repairing system files can sometimes solve an application problem