

A+ Guide to Managing and Maintaining Your PC, 7e

Chapter 14 *Optimizing Windows*

Objectives

- Learn about Windows utilities and tools you can use to solve problems with Windows
- Learn how to optimize Windows to improve performance

Windows Utilities and Tools to Support the OS

- Tools covered
 - Task Manager
 - System Configuration Utility (MSconfig)
 - Services console
 - Computer Management console
 - Microsoft Management Console (MMC)
 - Event Viewer
 - Reliability and Performance Monitor
 - Registry Editor

Task Manager

- Taskmgr.exe displays applications and processes

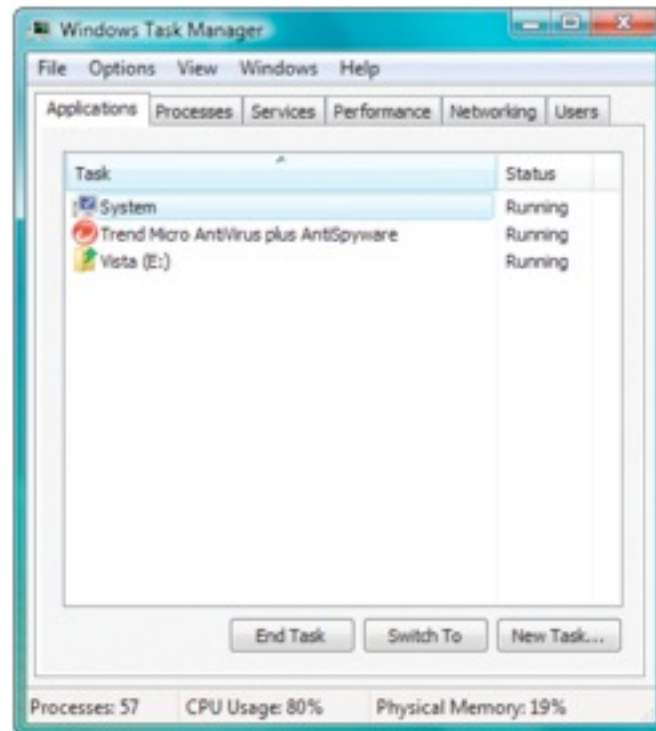


Figure 14-1 The Applications tab in Task Manager shows the status of active applications
Courtesy: Course Technology/Cengage Learning

Task Manager (cont'd.)

- Accessing task manager
 - Press Ctrl+Alt+Delete
 - Right-click taskbar blank area
 - Press Ctrl+Shift+Esc
 - Vista Start Search box or XP Run dialog box
 - Enter taskmgr.exe
- Applications tab
 - States: running or not responding
 - End task button at bottom of the window
 - Attempts a normal shutdown

Task Manager (cont'd.)

- Processes tab
 - Lists system services and other processes, CPU time, and memory use
 - Identifies applications slowing down a system
- Showing all processes running under current user
 - System, Local Service, and Network Service accounts
 - Cannot display dialog box on-screen or interact with user
- Stopping a process
 - Click End Process
- Recommendation: use Applications tab first

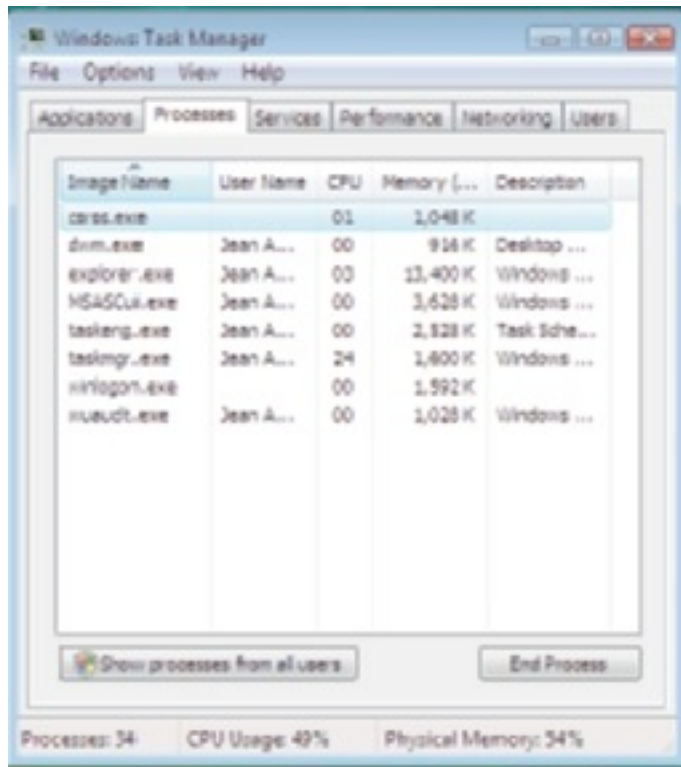


Figure 14-3 Processes running under the current user for a new Vista installation
 Courtesy: Course Technology/
 Cengage Learning

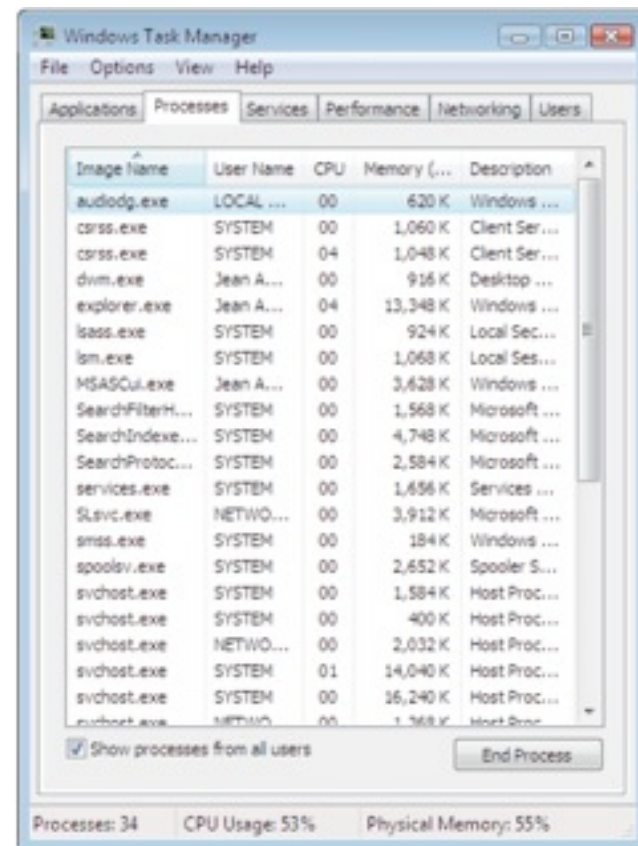


Figure 14-4 Vista processes for all users
 Courtesy: Course Technology/
 Cengage Learning

Task Manager (cont'd.)

- Viewing running application processes
 - Select application listed on Applications tab
 - Right-click it and select Go To Process
 - End the process and all related processes
 - Right-click the process and select End Process Tree
 - Do not end Windows critical process
- Process priority level
 - Determines position CPU resources queue
 - Use Task Manager to change priority level

Task Manager (cont'd.)

- Services tab
 - Lists currently installed services with status

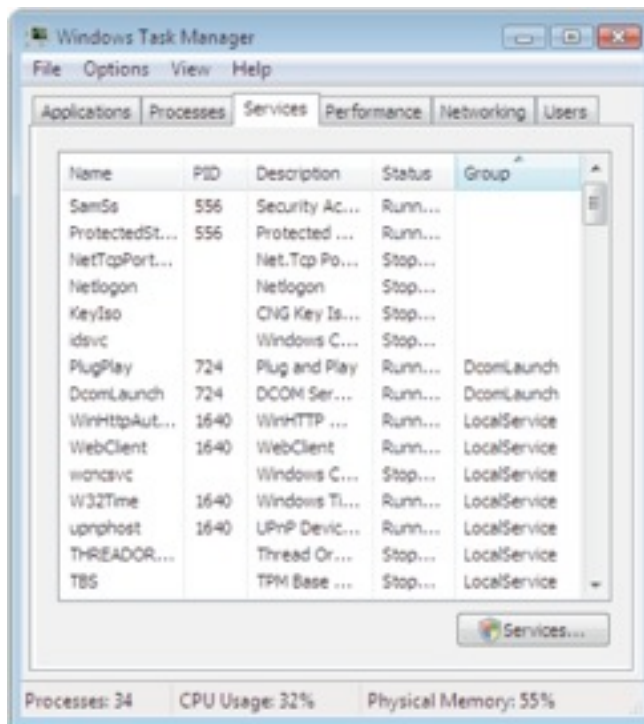


Figure 14-7 This Services tab of Windows Vista Task Manager gives the current status of all installed services
Courtesy: Course Technology/Cengage Learning

Task Manager (cont'd.)

- Performance tab
 - Identifies applications, processes using most CPU time

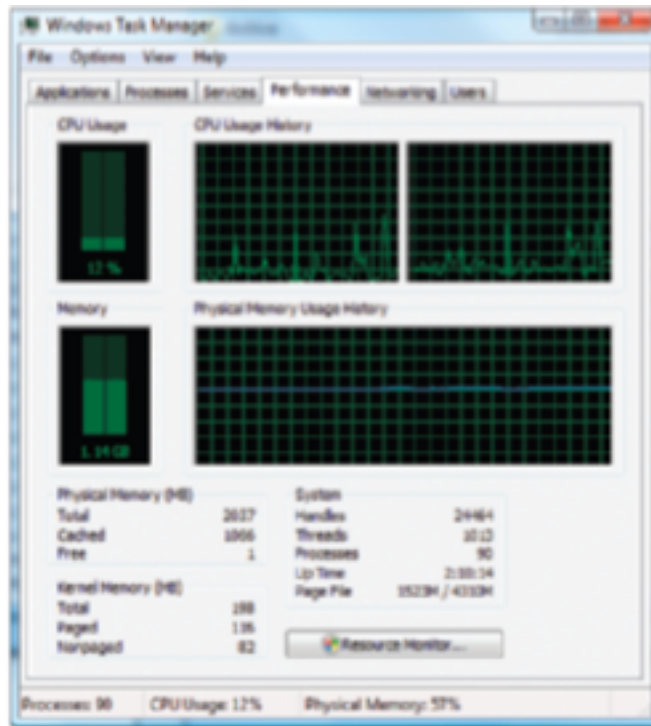


Figure 14-8 The Performance tab window shows details about how system resources are being used
Courtesy: Course Technology/
Cengage Learning

Task Manager (cont'd.)

- Networking tab
 - Displays how heavily network being used by a computer

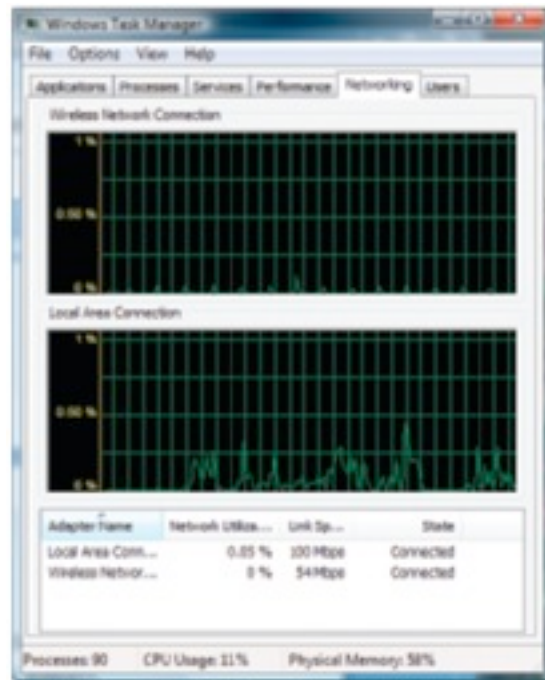


Figure 14-9 Use the Networking tab of Task Manager to monitor network activity
Courtesy: Course Technology/
Cengage Learning

Task Manager (cont'd.)

- Users tab
 - Shows all users currently logged on
 - Log off user to improve performance

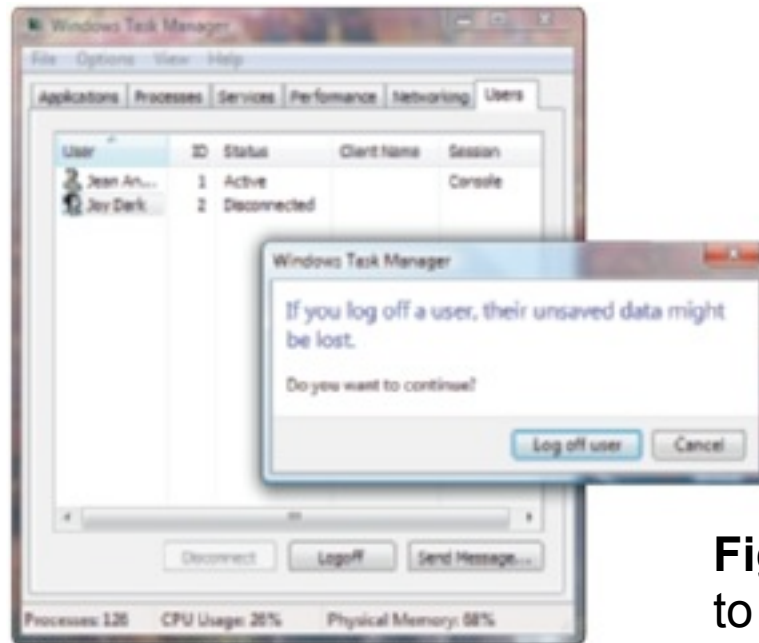


Figure 14-10 Use Task Manager to log off a user

Quick #1

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- 4. True or False: The Windows XP Task Manager includes the Services tab.

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System Configuration Utility (MSconfig)

- Msconfig.exe
 - Temporary fix to disable program or service from loading

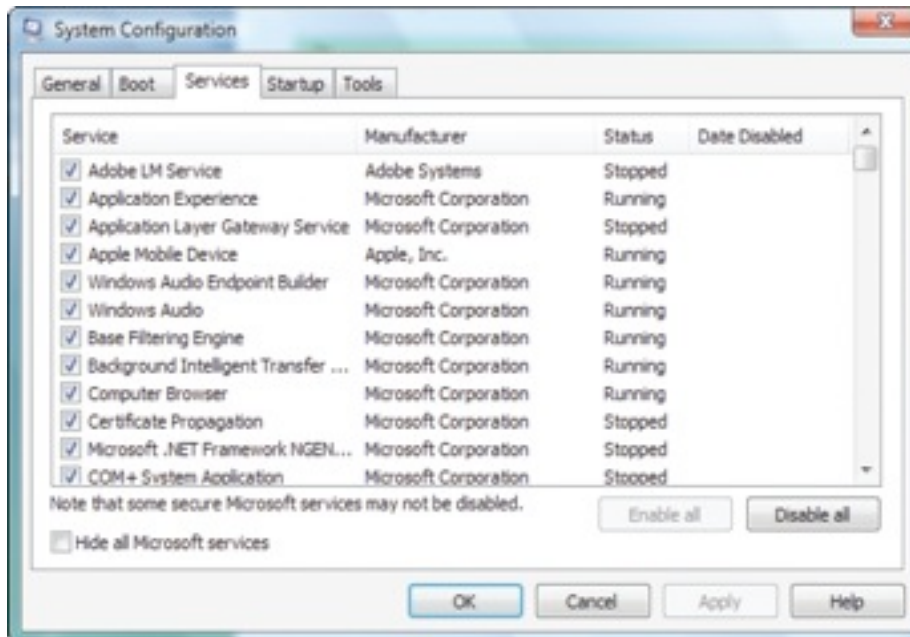


Figure 14-14 Use MSconfig to view and control services launched at startup. Courtesy: Course Technology/Cengage Learning

Services Console

- Launching the services console
 - Vista Start Search box or XP Run dialog box
 - Enter Services.msc

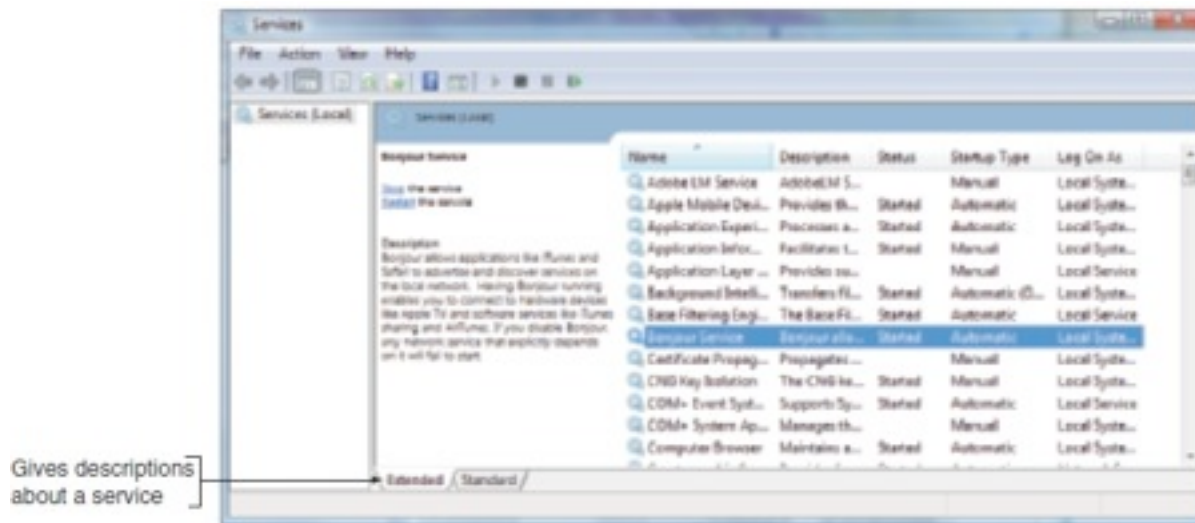


Figure 14-18 The Services window is used to manage Windows services
Courtesy: Course Technology/Cengage Learning

Services Console (cont'd.)

- Selecting Properties
 - Provides more information about a service
 - Allows stopping or starting a service
- Service startup types
 - Automatic (Delayed Start): starts shortly after startup, after the user logs on
 - Automatic: starts when Windows loads
 - Manual: starts as needed
 - Disabled: cannot be started
- Useful when cleaning up a Windows system

Computer Management

- Consolidates several Windows administrative tools
 - Use to manage local PC and other network computers
 - Administrator authority required
 - Viewing may allow lesser privileges
- Accessing Computer Management in Vista
 - Enter compmgmt.msc in Vista Start Search box
 - Click Start, right-click Computer, and select Manage
 - Control Panel
 - Click System and Maintenance, click Administrative Tools, and double-click Computer Management

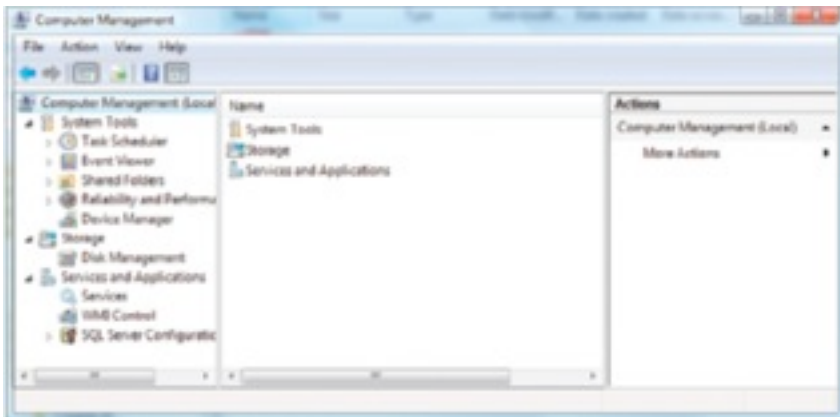


Figure 14-20 Windows Computer Management combines several administrative tools into a single easy-to-access window
 Courtesy: Course Technology/Cengage Learning

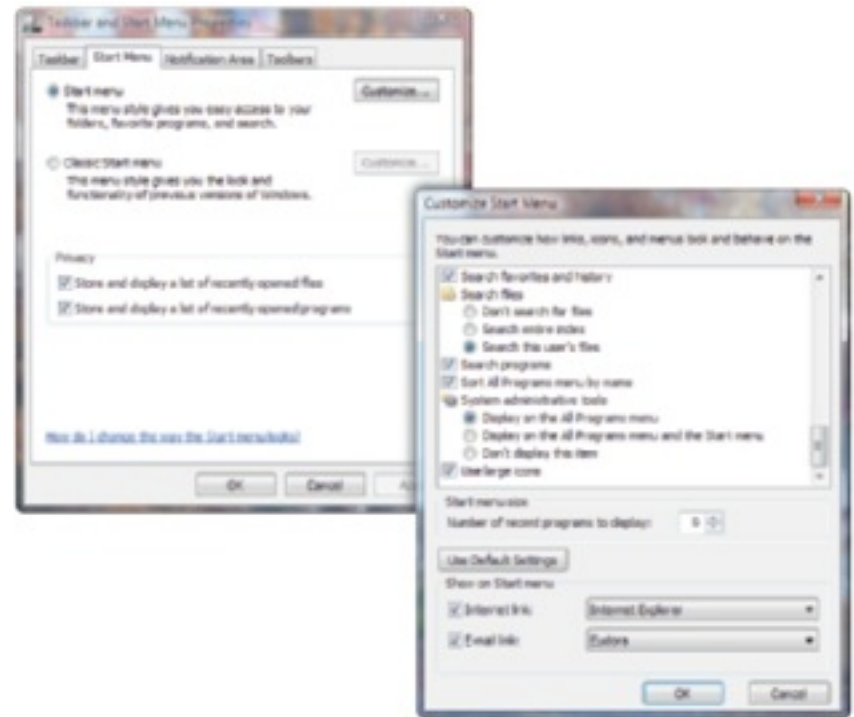


Figure 14-21 Use the Taskbar and Start Menu Properties window to change items on the Start menu
 Courtesy: Course Technology/Cengage Learning

Microsoft Management Console (MMC)

- Program file: mmc.exe
 - Windows utility to build customized console windows
 - Console is a single window containing one or more administrative tools
 - Snap-ins are individual tools in a console

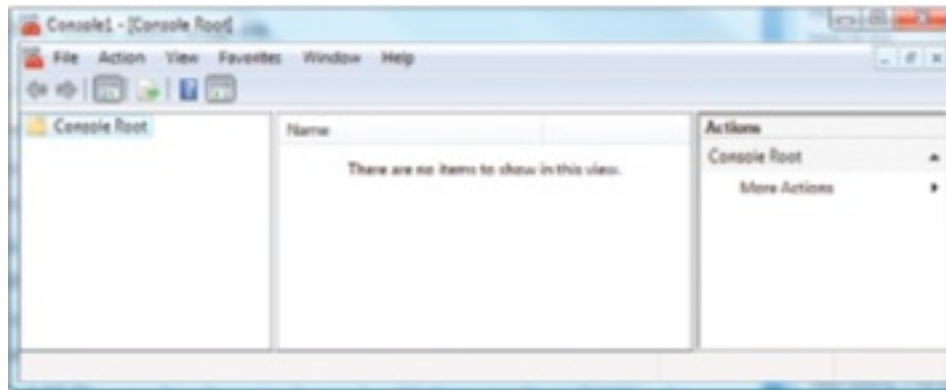


Figure 14-22 An empty console. Courtesy: Course Technology/Cengage Learning

Event Viewer

- Eventvwr.msc
 - Tool for troubleshooting problems with Windows, applications, and hardware
 - Also a Computer Management snap-in
- Manages logs of events
 - Three most important views of logs
 - Application log
 - Security log
 - System log

Event Viewer (cont'd.)

- Logs new to Windows Vista
 - Custom Views
 - The Setup log
 - The Forwarded Events
 - The Applications and Services Logs
 - The Subscriptions log
- System log: most important log other than security
 - Records three error event types
 - Information, warning, and error events

Event Viewer (cont'd.)

- Click log to view
- Save time reviewing logs by using filters
 - To view most significant events when troubleshooting check Critical and Error under Event level
- Avoid ballooning log file
 - Set size limit
 - Specify what happens when log reaches this limit
- Event viewer is most useful in solving intermittent hardware problems

Reliability and Performance Monitor

- Perfmon.msc (another MMC snap-in)
 - Collects, records, and displays events (i.e., Data Collector Sets)
- Windows XP
 - Monitor called Performance Monitor or System Monitor
- Starting the monitor
 - Use Administrative Tool applet in Control Panel
 - Open Computer Management Console
 - Enter perfmon.msc in Vista Start Search box or XP Run box

Reliability and Performance Monitor (cont'd.)

- Contains three monitoring tools
 - Performance Monitor provides real-time view of Windows performance counters
 - Reliability Monitor provides historical data showing stability
 - Data Collector Sets utility collects data about the system
- Viewing system diagnostics data as a report
 - Right-click System Diagnostics and select Latest Report from shortcut menu

The Registry Editor

- Difficult problems might require editing or removal of a registry key
- Registry organization
 - Registry
 - Database designed with a treelike structure (i.e., hierarchical database)
 - Contains configuration information for Windows, users, software applications, and installed hardware devices
 - Registry built in memory at startup
 - Windows uses current hardware configuration and information taken from files

The Registry Editor (cont'd.)

- Registry organized into five treelike structures
 - Each segment called a key
 - Each key can have subkeys
 - Subkeys can have more subkeys and can be assigned one or more values
 - Data is organized in hive files
 - Different from organization in registry keys

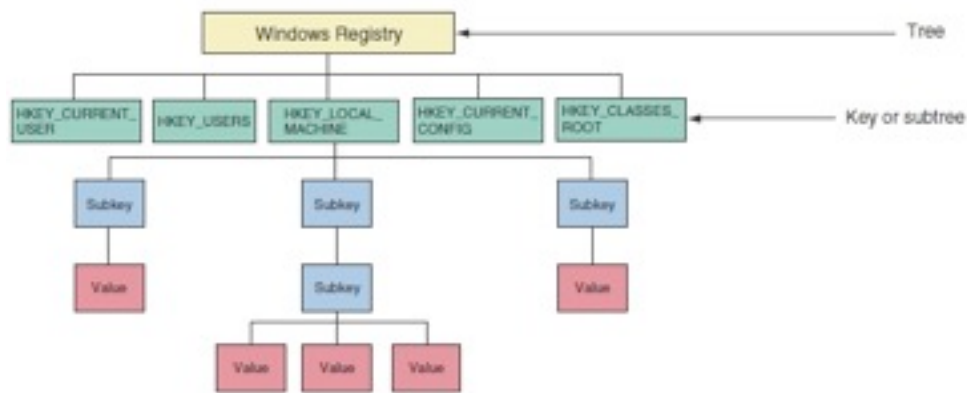


Figure 14-36 The Windows registry is logically organized in an upside-down tree structure of keys, subkeys, and values
 Courtesy: Course Technology/Cengage Learning

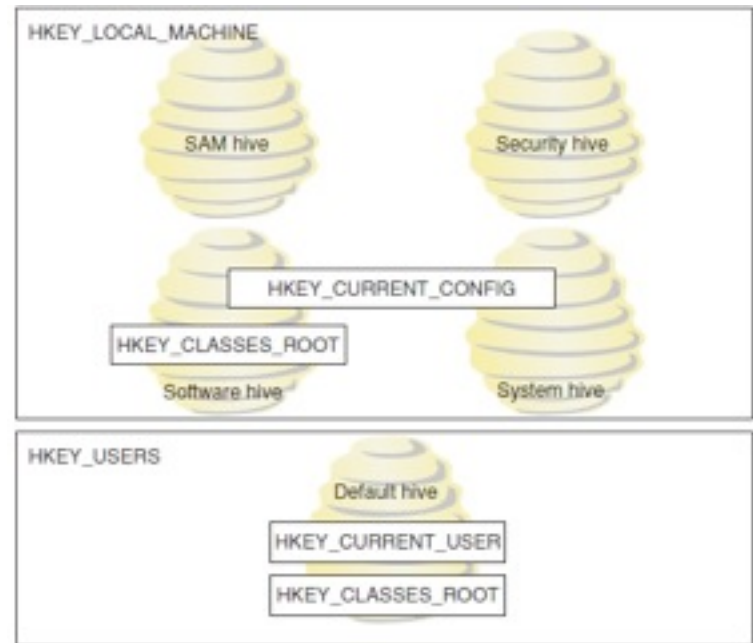


Figure 14-37 The relationship between registry subtrees (keys) and hives
 Courtesy: Course Technology/Cengage Learning

The Registry Editor (cont'd.)

- Five keys:
 - HKEY_LOCAL_MACHINE (HKLM)
 - HKEY_CURRENT_CONFIG (HKCC)
 - HKEY_CLASSES_ROOT (HKCR)
 - HKEY_USERS (HKU)
 - HKEY_CURRENT_USER (HKCU)

The Registry Editor (cont'd.)

- Before editing the registry
 - Back up registry
 - Use System Protection to create a restore point
 - Back up a single registry key just before editing the key
 - Make an extra copy of the C:\Windows\System32\config folder
 - For Windows XP, back up the system state
 - Back up and restore individual keys
- Edit the registry with Registry Editor (regedit.exe)

Quick Quiz #2

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Improving Windows Performance

- Assuming Windows is starting with no errors
 - Use 11 step-by-step procedures
 - Search for problems affecting performance
 - Clean up Windows startup process
- Trouble starting windows
 - Address those errors first before addressing performance
 - See Chapters 15 and 16

Improving Windows Performance (cont'd.)

- Step 1: Perform routine maintenance
 - Verify critical Windows settings
 - Clean up and defrag hard drive
 - Check hard drive for errors
 - Disable and remove unwanted startup programs
 - Back up data
- Step 2: Check if hardware support the OS
 - Vista Windows Experience Index
 - Vista Upgrade Advisor: checks compatibility
 - Run System Information Utility (msinfo32.exe)

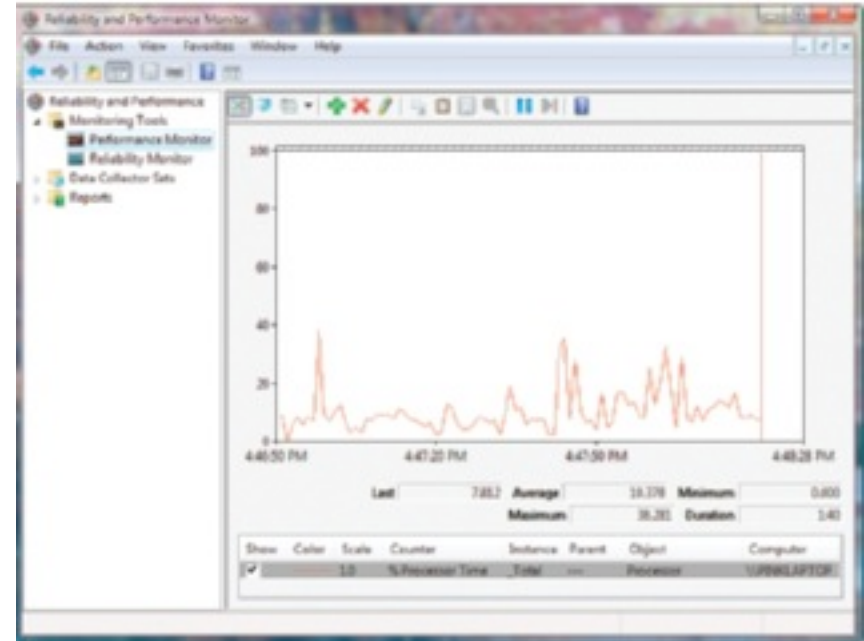
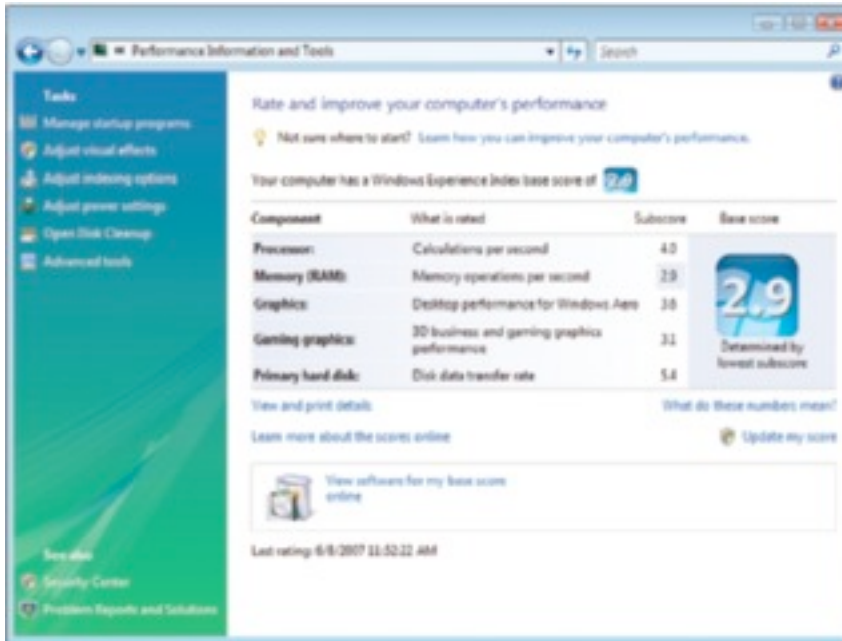


Figure 14-41 Use the Windows Experience Index to get a snapshot of a computer's performance and identify potential bottlenecks
 Courtesy: Course Technology/Cengage Learning

Figure 14-43 The Performance monitor tracking CPU performance
 Courtesy: Course Technology/Cengage Learning

Improving Windows Performance (cont'd.)

- Step 3: Check for performance warnings
 - View warnings in Windows Experience Index window
 - Advanced tools
 - Clicking an issue
 - Displays dialog box describing the issue
 - Gives suggestions to resolve it
 - Investigate each issue one at a time
 - Tools to assist in troubleshooting are listed in Advanced Tools window



Figure 14-44 Vista provides these warnings and tools to improve Vista performance
 Courtesy: Course Technology/Cengage Learning

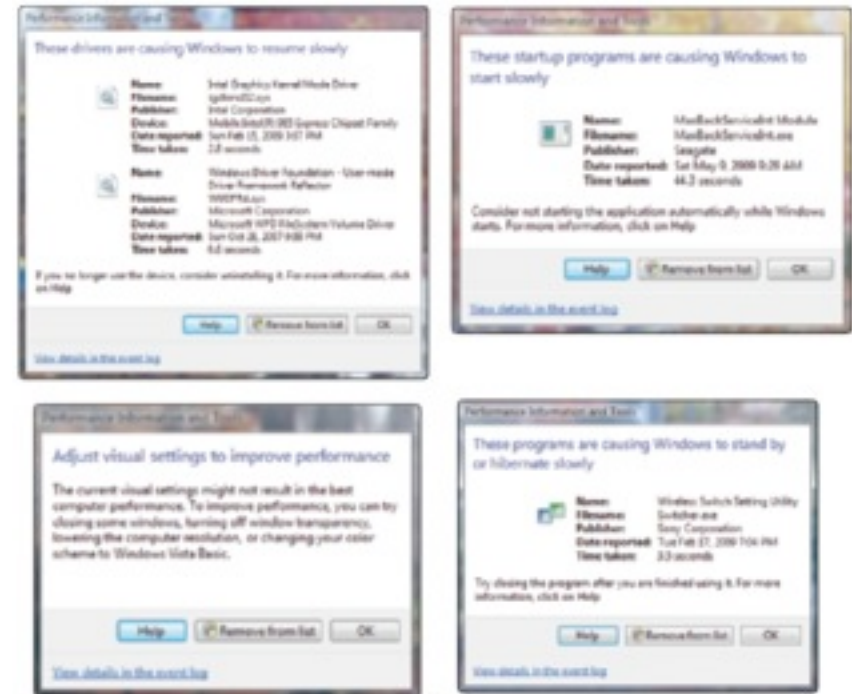


Figure 14-45 Windows reports four issues that are affecting performance
 Courtesy: Course Technology/Cengage Learning

Improving Windows Performance (cont'd.)

- Step 4: Check the reliability monitor
 - Determine if a problem with hardware or software installation is affecting performance
 - Determine when time problem started



Figure 14-48 Use Reliability Monitor to search for when a problem began
Courtesy: Course Technology/
Cengage Learning

Improving Windows Performance (cont'd.)

- Step 5: Disable the indexer for Windows search
 - May cause problems
- Step 6: Disable the Vista Aero interface
 - Uses memory and computing power
 - May require memory or video card upgrade or leaving interface disabled
- Step 7: Disable the Vista Sidebar
 - Might see slight performance improvement

Improving Windows Performance (cont'd.)

- Step 8: Plug up any memory leaks
 - Use Reliability and Performance Monitor
 - Click down arrow on the Memory bar
 - Use Task Manager Processes tab
 - Click View and Select Columns
 - Verify Memory Private Working Set, Handles, and Threads columns are checked
 - Watch values over time for increases
 - Solving memory leak
 - Obtain update or patch from program manufacturer's Web site

Improving Windows Performance (cont'd.)

- Step 9: Consider disabling the Vista UAC box
 - Might slightly improve performance
 - Disabling not recommended
- Step 10: Consider using Vista ReadyBoost
 - Flash drive or secure digital (SD) memory card used to boost hard drive performance
 - Acts as a buffer to speed up access time
 - Best for hard drive less than 7200 RPM
 - Windows automatically tests device qualifications
 - 256 MB to 4 GB, 256 MB free space, 2 MB/sec of throughput

Improving Windows Performance (cont'd.)

- Step 11: Clean windows startup
 - Verify startup programs kept to a minimum
 - Check startup folders in Windows XP
 - Check Software Explorer in Windows Vista
 - Cleaning Windows startup
 - Use Safe Mode and MSconfig to find out more about the problem
 - Disable or uninstall programs causing problems

Improving Windows Performance (cont'd.)

- Step 11: Clean windows startup (cont'd.)
 - Observe performance in Safe Mode
 - Improvement indicates nonessential program issue
 - Time a normal startup and a Safe Mode boot
 - Significant difference: reduce Windows startup to essentials
 - No improvement indicates problem with hardware device, critical driver, or Windows component

Improving Windows Performance (cont'd.)

- Step 11: Clean Windows startup (cont'd.)
 - Use MSconfig to find startup program affecting performance
 - Recommended strategy: half-again search
 - Disable or uninstall background processes and startup programs
 - Permanently manage a service
 - Use services console or Windows component responsible for the service
 - Investigate service with good search engine
 - Reboot and test

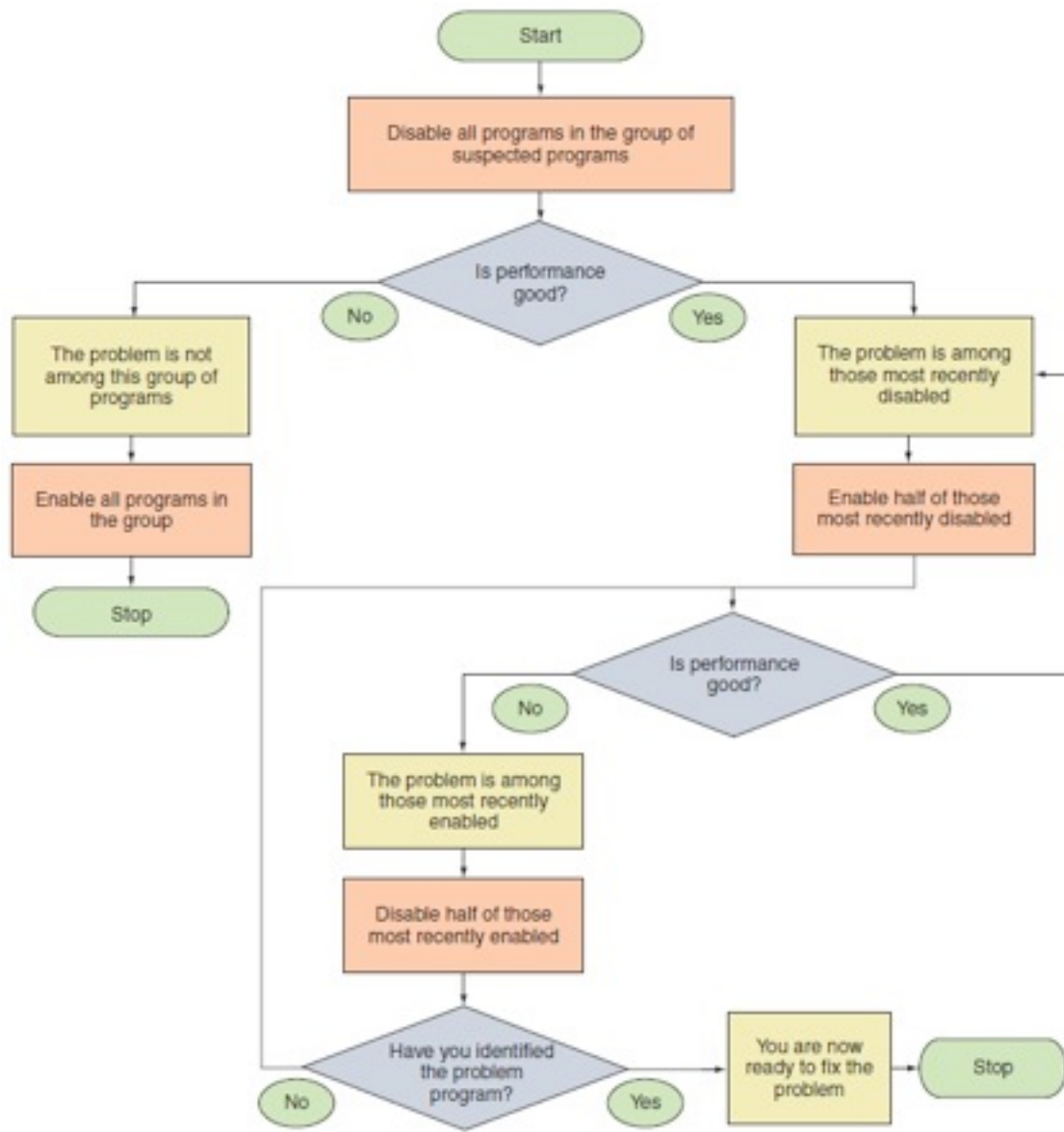


Figure 14-60 Strategy to identify the program(s) causing the problem
 Courtesy: Course Technology/Cengage Learning

Improving Windows Performance (cont'd.)

- Step 11: Clean Windows Startup (cont'd.)
 - Check for unwanted scheduled tasks
 - Verify Task Scheduler contents
 - Review details of all scheduled tasks
 - Look for hidden tasks
 - Disable suspect tasks, test, and delete as necessary

How To Manually Remove Software

- Manually uninstall
 - Programs refusing to uninstall or giving errors when uninstalling
 - Use as a last resort
 - Try program's uninstall routine
 - Manually delete program's files
 - Manually delete registry entries
 - Remove program from All Programs menu
 - Restart PC and watch for errors
 - Fix orphaned entry (as necessary)

How To Manually Remove Software (cont'd.)

- Keys causing an entry to run only once at startup
 - HKLM\Software\Microsoft\Windows\CurrentVersion\RunOnce
 - HKLM\Software\Microsoft\Windows\CurrentVersion\RunServiceOnce
 - HKLM\Software\Microsoft\Windows\CurrentVersion\RunServicesOnce
 - HKCU\Software\Microsoft\Windows\CurrentVersion\RunOnce

How To Manually Remove Software (cont'd.)

- Group Policy keys affecting startup
 - HKCU\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer\Run
 - HKLM\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer\Run
- DLL programs key
 - Normal: do not delete unless positive
 - HKLM\Software\Microsoft\Windows\CurrentVersion\ShellServiceObjectDelayLoad

How To Manually Remove Software (cont'd.)

- Keys applying to all users and hold legitimate startup entries
 - Do not delete unless you suspect it to be bad
 - HKLM\Software\Microsoft\Windows\CurrentVersion\Run
 - HKCU\Software\Microsoft\Windows NT\CurrentVersion\Windows
 - HKCU\Software\Microsoft\Windows NT\CurrentVersion\Windows\Run
 - HKCU\Software\Microsoft\Windows\CurrentVersion\Run

How To Manually Remove Software (cont'd.)

- Entries pertaining to background services
 - HKLM\Software\Microsoft\Windows\CurrentVersion\RunService
 - HKLM\Software\Microsoft\Windows\CurrentVersion\RunServices
- Key containing value named BootExecute
 - Normally set to autochk
 - Causes system to run a type of Chkdsk program
 - HKLM\System\CurrentControlSet\Control\Session Manager
- Several others cause various problems at startup

Monitor the Startup Process

- Third-party tools monitoring startup changes
 - WinPatrol by BillP Studios (free)
 - Runs in background
 - Monitors registry changes, startup processes, IE settings, and system files
 - Antivirus software

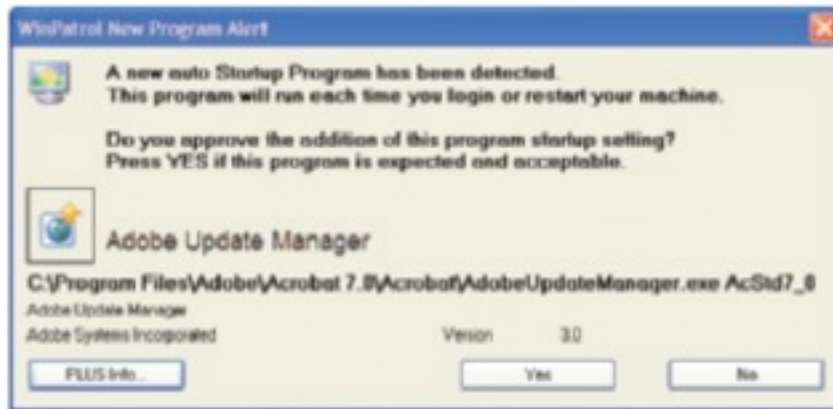


Figure 14-72 WinPatrol by BillP Studios alerts you when the startup process is about to be altered
Courtesy: Course Technology/
Cengage Learning

Quick Quiz #3

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- 3. Windows Vista _____ uses a flash drive or secure digital (SD) memory card to boost hard drive performance.

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- Answer: ReadyBoost

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- 3. Windows Vista _____ uses a flash drive or secure digital (SD) memory card to boost hard drive performance.
- Answer: ReadyBoost
- 4. True or False: To boot the system in Safe Mode; press F6 while Windows is loading.

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- 3. Windows Vista _____ uses a flash drive or secure digital (SD) memory card to boost hard drive performance.
- Answer: ReadyBoost
- 4. True or False: To boot the system in Safe Mode; press F6 while Windows is loading.
- Answer: False

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- Answer: Windows Experience Index
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- 5. True or False: The Services console may be used to permanently remove startup entries from startup.

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Summary

- Tools to optimize Windows
 - Task Manager
 - System Configuration Utility (MSconfig)
 - Services console
 - Computer Management console
 - Microsoft Management Console (MMC)
 - Event Viewer
 - Reliability and Performance Monitor
- Registry is organized into five treelike structures
 - Registry Editor

Summary (cont'd.)

- To troubleshoot a sluggish Windows system
 - Follow 11 steps
- Manually remove software
 - Try program's uninstall routine
 - Manually delete the program's files
 - Manually delete registry entries
 - Remove the program from All Programs menu
 - Restart PC and watch for errors
 - Fix orphaned entry (as necessary)
- Use third-party tools monitoring startup changes