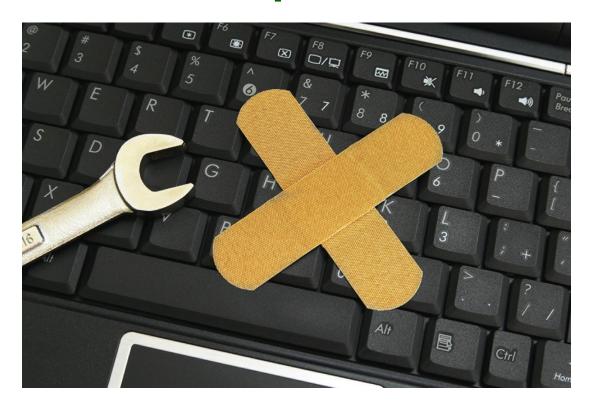
### **Troubleshooting Windows** Chapter 19



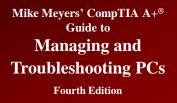


#### **Overview**

#### • In this chapter, you will learn how to

- Troubleshoot Windows boot problems
- Troubleshoot Windows GUI problems
- Troubleshoot Windows application problems

#### **Failure to Boot**



# Failure to Boot: Hardware or Configuration

- Determine the symptoms:
  - Blank screen/error messages
  - Sounds/smells (clicking hard drive, burning components)
  - Hardware issue: troubleshoot and repair/replace



Figure 1: If you see this screen, the problem is with hardware. Windows hasn't even started trying to boot.

### Failure to Boot: Hardware or Configuration (continued)

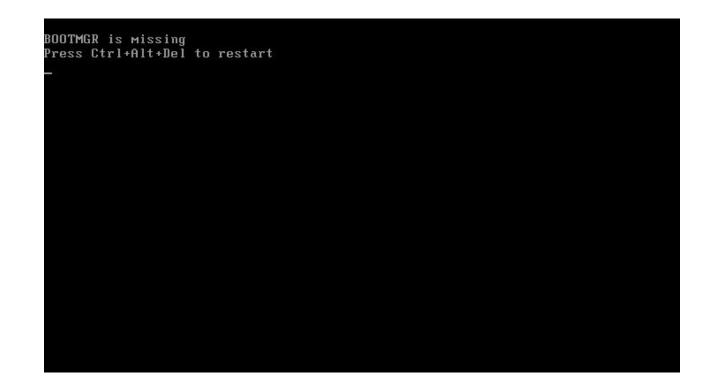
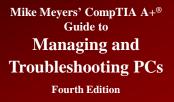


Figure 2: Scary error

- This failure occurs in the moments between the time POST ends and the Loading Windows screen appears.
- For Windows XP to start loading the main operating system, the critical system files ntldr, ntdetect.com, and boot.ini must reside in the root directory of the C: drive, and boot.ini must point to the Windows boot files.

### Failure to Boot: Windows XP (continued)

- Common error messages that appear during this process include:
  - No Boot Device Present
  - NTLDR Bad or Missing
  - Invalid BOOT.INI
- If you get one of these error messages, you have 3 possibilities to get back up and running:
  - You first should attempt to repair.
  - If that fails, try to restore a backup of Windows.
  - If restore is either not available or fails, your only recourse is to rebuild.



### Failure to Boot: Windows XP (continued)

- Attempt to repair by using the Recovery Console
  - The Recovery Console provides a command-line interface for working with Windows before the GUI starts.
  - Boot from the installation CD-ROM. You have three options from the initial screen: set up Windows XP, repair using the Recovery Console, and quit Setup.
  - Press R to start the Recovery Console.
  - If you had previously installed the Recovery Console on your hard drive, you may be able to boot from it as well.

#### Failure to Boot: Windows XP (continued)

Windows XP Professional Setup
Welcome to Setup.
This portion of the Setup program prepares Microsoft(R) Windows(R) XP to run on your computer.
<ul> <li>To set up Windows XP now, press ENTER.</li> </ul>
<ul> <li>To repair a Windows XP installation using Recovery Console, press R.</li> </ul>
<ul> <li>To quit Setup without installing Windows XP, press F3.</li> </ul>
ENTER=Continue R=Repair F3=Quit

Figure 3: Initial Windows XP Setup screen

### Failure to Boot: Windows XP (continued)

- Attempt to repair by using the Recovery Console (continued)
  - Once the Recovery Console starts, follow the instructions for logging on to a Windows installation on your computer (if there is only one installation of Windows XP on your computer, type the number 1 at the prompt and press the ENTER key) and enter the administrator password.
  - At the prompt, use the Recovery Console commands to repair problems and solve issues.

#### Failure to Boot: Windows XP (continued)

Command	Description
attrib	Changes attributes of selected file or folder
cd (or chdir)	Displays current directory or changes directories
chkdsk	Runs CheckDisk utility
cls	Clears screen
сору	Copies from removable media to system folders on hard disk. No wildcards
del (or delete)	Deletes service or folder
dir	Lists contents of selected directory on system partition only
disable	Disables service or driver
diskpart	Creates/deletes partitions
enable	Enables service or driver
extract	Extracts components from .cab files
fixboot	Writes new partition boot sector on system partition
fixmbr	Writes new master boot record (MBR) for partition boot sector
format	Formats selected disk
listsvc	Lists all services on system
logon	Enables you to choose which Windows installation to log on to if you have more than one
map	Displays current drive letter mappings
md (or mkdir)	Creates a directory
more (or type)	Displays contents of a text file
rd (or rmdir)	Removes a directory
ren (or rename)	Renames a single file
systemroot	Makes current directory system root of drive you're logged on to
type	Displays contents of a text file
	Table 1: Common Recovery Console Commands

### Failure to Boot: Windows XP (continued)

- Attempt to repair by using the Recovery Console (continued)
  - Use the Recovery Console to manually restore Registries, stop problem services, rebuild partitions (other than the system partition), and use the EXPAND program to extract copies of corrupted files from an optical disc or floppy disk.
  - The Recovery Console also works great for fixing three items: repairing the MBR, reinstalling the boot files, and rebuilding boot.ini.
  - A bad boot sector usually shows up as a No Boot Device Present error—use the fixmbr command to fix the master boot record.

### Failure to Boot: Windows XP (continued)

- Attempt to repair by using the Recovery Console (continued)
  - Missing system files are usually indicated by the error NTLDR Bad or Missing—copy these files from the source CD/DVD to the system within the Recovery Console.
  - If the boot.ini file is gone or corrupted, run this command from the Recovery Console: bootcfg /rebuild
  - If the Recovery Console fixes the problem, do a thorough backup as soon as possible.

### Failure to Boot: Windows XP (continued)

#### Attempt to restore

- If you have good backups, you can attempt to restore to an earlier, working copy of Windows.
- If you use the Automated System Recovery (ASR) backup, this will restore your system to a previously installed state, but you should use it as a last resort—you lose everything on the system that was installed or added after you created the ASR disk.



### Failure to Boot: Windows XP (continued)

#### Rebuild

- You could simply reboot to the Windows CD-ROM and install right on top of the existing system, but that's usually not the optimal solution.
- Swap the C: drive for a blank hard drive and install a clean version of Windows. Then copy files and settings back over later.
- Most OEM systems come with a Recovery CD, which is actually a pointer to a recovery partition. The Recovery CD is a CD-ROM that you boot to and run. The recovery partition is a hidden partition on the hard drive that you activate at boot by holding down a key combination specific to the manufacturer of that system.

### Failure to Boot: Windows Vista and Windows 7

 Two critical boot files risk corruption in Windows Vista and Windows 7, bootmgr and bcd, both of which you can fix with one tool, bcdedit. You can use this tool in the Windows Recovery Environment.

## Failure to Boot: Windows Vista and Windows 7 (continued)

- WinPE and the death of the Recovery Console
  - With Windows Vista, Microsoft upgraded the installation environment from the 16-bit text mode environment used in every previous version of Windows to 32- and 64-bit.
  - This enabled the Windows installation process to go graphical and support features such as a mouse pointer and clickable elements rather than rely on command-line tools.
  - Microsoft calls the installation environment the Windows Preinstallation Environment (WinPE or Windows PE).

### Failure to Boot: Windows Vista and Windows 7 (continued)

- WinPE and the death of the Recovery Console (continued)
  - With Windows PE, you can boot directly to the Windows DVD. This loads a limited-function graphical operating system that contains both troubleshooting and diagnostic tools, along with installation options.
  - When you access Windows PE and opt for the troubleshooting and repair features, you open a special set of tools called the Windows Recovery Environment (WinRE or Windows RE).

## Failure to Boot: Windows Vista and Windows 7 (continued)

#### • Enter Windows RE

- Windows Recovery Environment not only replaces the Recovery Console, it improves it.
- WinRE includes an impressive, powerful set of both automated and manual utilities that collectively diagnoses and fixes all but the most serious Windows boot problems.

### Failure to Boot: Windows Vista and Windows 7 (continued)

### • In Windows 7, you can access WinRE in three ways:

- First, you can boot from the Windows installation media and select Repair.
- Second, you can use the Repair Your Computer option on the Advanced Boot Options (F8) menu.
- Third, you can create a system repair disc before you have problems. Go to Control Panel | System and Security | Backup and Restore and select Create a system repair disc.
- Accessing it from the Windows installation media is the preferred way, because your hard drive may be inaccessible.

### Failure to Boot: Windows Vista and Windows 7 (continued)

Advanced Boot Options	
Choose Advanced Options for: Windows 7 (Use the arrow keys to highlight your choice.)	
Repair Your Computer	
Safe Mode	
Safe Mode with Networking Safe Mode with Command Prompt	
Enable Boot Logging Enable low-resolution video (640x480) Last Known Good Configuration (advanced) Directory Services Restore Mode Debugging Mode Disable automatic restart on system failure Disable Driver Signature Enforcement	
Start Windows Normally	
Description: View a list of system recovery tools you can use to re startup problems, run diagnostics, or restore your sys	
ENTER=Choose	ESC=Cancel

Figure 4: Selecting Repair Your Computer in the Advanced Boot Options menu

### Failure to Boot: Windows Vista and Windows 7 (continued)

Back up or restore your files
Backup
Windows Backup has not been set up.
repair disc can be used to boot your computer. It also contains is system recovery tools that can help you recover Windows from a
rs system recovery tools that can help you recover Windows from a error or restore your computer from a system image.
is system recovery tools that can help you recover Windows from a
rs system recovery tools that can help you recover Windows from a error or restore your computer from a system image.

Figure 5: Making a system repair disc in Windows 7

## Failure to Boot: Windows Vista and Windows 7 (continued)

- Using Windows RE—you have 5 options in WinRE:
  - Startup Repair serves as a one-stop, do-it-all option, including:
    - Repairs a corrupted Registry by using the backup on the hard drive
    - Restores critical system and driver files
    - Runs the equivalent of the Recovery Console's fixboot and fixmbr
    - Rolls back any non-working drivers
    - Uninstalls any incompatible service packs and patches
    - Runs chkdsk
    - Runs a memory test to check RAM

### Failure to Boot: Windows Vista and Windows 7 (continued)

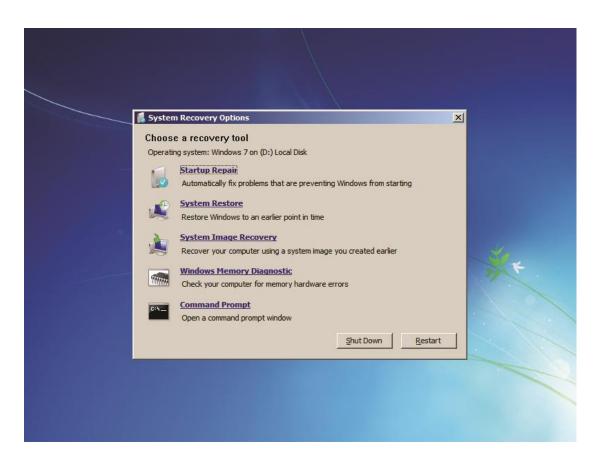


Figure 6: Recovery Environment main screen

### Failure to Boot: Windows Vista and Windows 7 (continued)

📕 Startup R	epair			×
Startup R	epair is checking your syste	em for problems		
several time	are found, Startup Repair will fi es during this process. s will be made to your personal fi s de made to your personal fi Searching for problems			
		1	1	
		< <u>B</u> ack <u>N</u>	ext > Canc	el

Figure 7: Startup Repair in action

### Failure to Boot: Windows Vista and Windows 7 (continued)

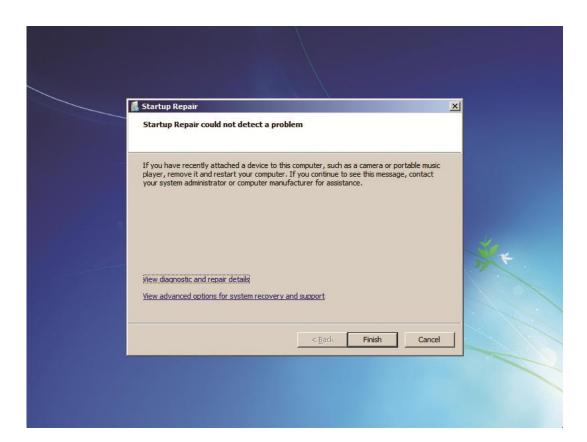


Figure 8: Startup Repair complete; no problems found

### Failure to Boot: Windows Vista and Windows 7 (continued)

#### • Using Windows RE (continued):

- In Windows 7, Startup Repair starts automatically if your system detects a boot problem.
- System Restore uses restore points to go back to a time when your computer worked properly.
- System Image Recovery (Windows 7) or Windows Complete PC Restore (Vista) uses a backup image to restore your system after a catastrophe. It offers format and partitioning options for new disks. It will destroy existing data on the drive when restoring backed-up data.

### Failure to Boot: Windows Vista and Windows 7 (continued)

Windows Error Recovery Windows failed to start. A recent hardware or software change might be the cause. If Windows files have been damaged or configured incorrectly, Startup Repair can help diagnose and fix the problem. If power was interrupted during startup, choose Start Windows Normally. (Use the arrow keys to highlight your choice.) Launch Startup Repair (recommended) Start Windows Normally Seconds until the highlighted choice will be selected automatically: 14 Description: Fix problems that are preventing Windows from starting ENTER=Choose

Figure 9: Windows Error Recovery

#### Failure to Boot: Windows Vista and Windows 7 (continued)

System Restore Restore your computer t	o the state it was in before the selecte	ed event
How do I choose a restore po		
Date and Time 💌	Description	Туре
2/19/2010 11:37:54 AM	Automatic Restore Point	System
11/10/2009 7:59:00 PM	Installed VMware Tools	Install
11/10/2009 2:06:08 PM	Windows Update	Critical Update
Show more restore points		Scan for affected programs

Figure 10: System Restore points

### Failure to Boot: Windows Vista and Windows 7 (continued)

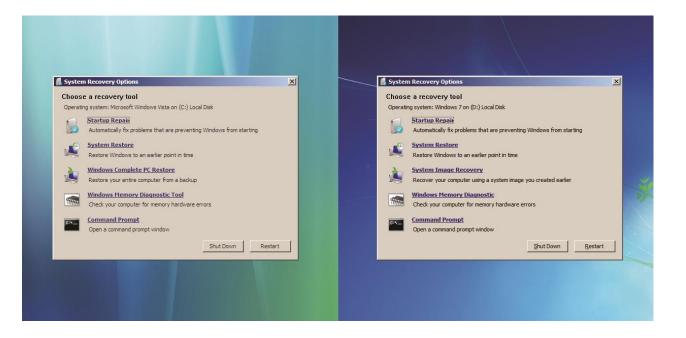


Figure 11: The WinRE options in Windows Vista (left) and Windows 7 (right)

### Failure to Boot: Windows Vista and Windows 7 (continued)

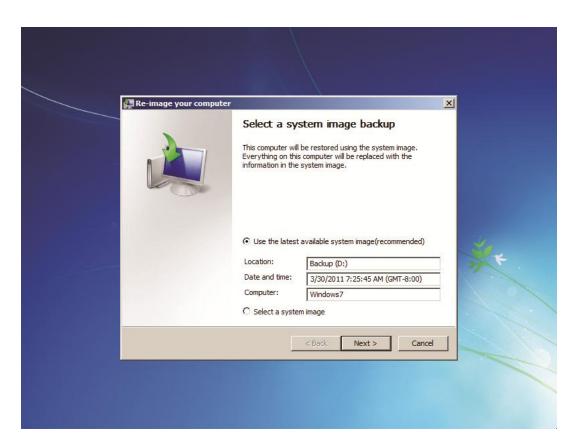


Figure 12: Selecting a system image

### Failure to Boot: Windows Vista and Windows 7 (continued)

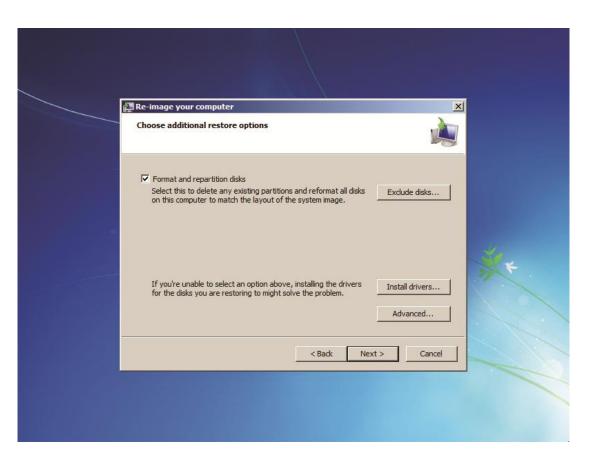


Figure 13: Additional restore options

### Failure to Boot: Windows Vista and Windows 7 (continued)

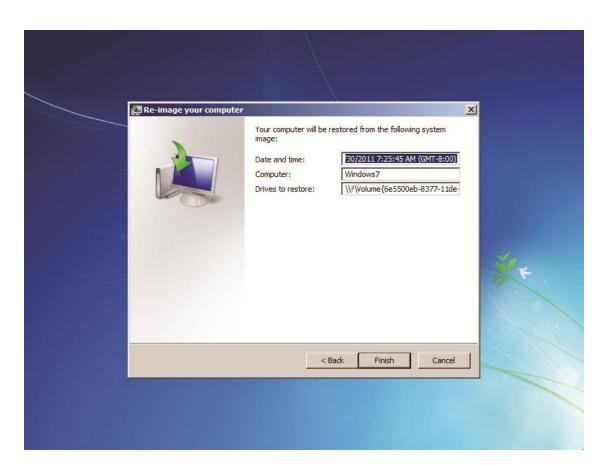


Figure 14: Confirming your settings

### Failure to Boot: Windows Vista and Windows 7 (continued)

R	e-image your computer Windows is restoring your computer fron from a few minutes to a few hours. Restoring disk (C:)	▼ m the system image. This might take
		Stop restore

Figure 15: Restoring your computer

### Failure to Boot: Windows Vista and Windows 7 (continued)

#### • Using Windows RE (continued):

– Windows Memory Diagnostic (Tool) (only Vista includes "Tool" in the name) will test system RAM. When you click the Windows Memory Diagnostic (Tool) link from the main WinRE screen, it prompts you to Restart now and check for problems (recommended) or Check for problems the next time I start my computer. It restarts and tests memory under 3 possible options: Basic, Standard, and Extended, depending on how much time you want it to take and how aggressive you want it to be.

### Failure to Boot: Windows Vista and Windows 7 (continued)

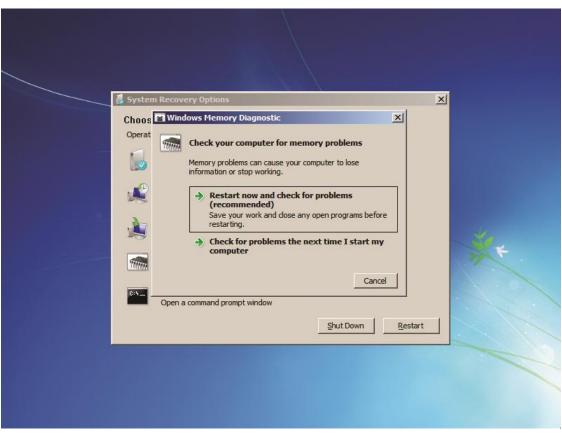


Figure 16: Windows Memory Diagnostic screen

#### Failure to Boot: Windows Vista and Windows 7 (continued)

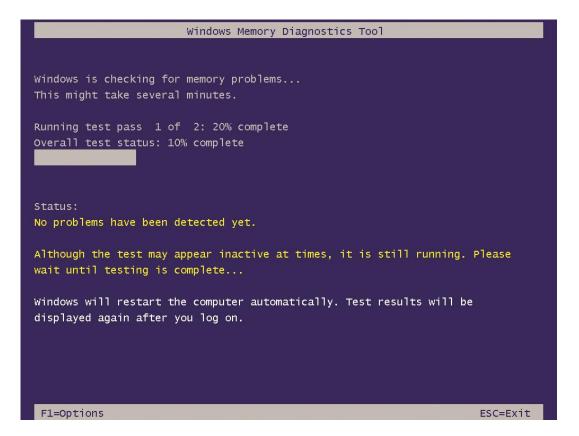


Figure 17: Windows Memory Diagnostic Tool running

#### Failure to Boot: Windows Vista and Windows 7 (continued)

Windows Memory Diagnostics Tool - Optic	ns
Test Mix:	
Basic <mark>Standard</mark> Extended	
Description: The Standard tests include all the Basic test Stride6 (cache enabled), CHCKR3, WMATS+, and	
Cache:	
Default On Off	
Description: Use the default cache setting of each test.	
Pass Count (0 - 99): 2	
Description: Set the total number of times the entire test repeat (0 = infinite).	: mix will
TAB=Next F10=Apply	ESC=Cancel

Figure 18: Windows Memory Diagnostic Tool options

### Failure to Boot: Windows Vista and Windows 7 (continued)

🔿 🛛 🗖 🛛 🖬									
	stem Numbe	er of events: 1,396					Acti	ions	
Custom Views	vel	Date and Time	Source	Event ID	Task C	*	Syst	tem	-
	Information	4/18/2011 12:48:32 PM	Service	7036	None		10	Open Saved Log	
	Information	4/18/2011 12:48:32 PM	Windo	14204	None		-	Create Custom Vie	
	Information	4/18/2011 12:48:32 PM	Service	7036	None		T		
	) Information	4/18/2011 12:48:19 PM	Service	7036	None			Import Custom Vie	
	Information	4/18/2011 12:48:19 PM	Service	7036	None			Clear Log	
Forwarded Events	Information	4/18/2011 12:48:19 PM	Memor	1201	None		7	Filter Current Log	
C	Information	4/18/2011 12:48:19 PM	Memor	1101	None		G	Properties	
🗃 Hardware Events	Information	4/18/2011 12:48:18 PM	Startup	1116	None			And a state of the state	
	Information	4/18/2011 12:48:18 PM	Startup	1002	None		88	Find	
Key Management Service	Information	4/18/2011 12:48:16 PM	Winlog	7001	(1101)			Save All Events As	
Media Center	Information	4/18/2011 12:48:12 PM	Service	7036	None			Attach a Task To th	
Microsoft	Information	A /19/2011 12:46:52 DM	Sanica	7026	Nono	•		View	-
Windows PowerShell	ent 1201, Mem	oryDiagnostics-Results				×	1775		*
	General Detai						Q	Refresh	
	Detai	IS					?	Help	1
	The Windows	Memory Diagnostic tested	the compute	r's memory	and detected no	errors	Eve	nt 1201, MemoryDia	
			•	-				Event Properties	
						*	1	Attach Task To This	
	•					•		Attach fask fo filisin	

Figure 19: Event Viewer results

### Failure to Boot: Windows Vista and Windows 7 (continued)

#### • Using Windows RE (continued):

- Command Prompt—the WinRE Command Prompt is a true 32- or 64-bit prompt that functions similarly to the regular Command Prompt.
- It includes an important utility (bootrec) tool that repairs the master boot record, boot sector, or BCD store. It replaces the old fixboot and fixmbr Recovery Console commands and adds two more repair features.
- The bcedit tool views and edits the BCD store—use import/export switches to work with the BCD store.
- EasyBCD is a third-party tool that is easier to use.

#### Failure to Boot: Windows Vista and Windows 7 (continued)

Windows Boot Manager	
Choose an operating system to start, or press TAB to select (Use the arrow keys to highlight your choice, then press EN	
Earlier Version of Windows Windows 7	>
To specify an advanced option for this choice, press F8.	
Tools:	
Windows Memory Diagnostic	
ENTER=Choose TAB=Menu	ESC=Cancel

Figure 20: bootmgr showing available versions of Windows

#### Failure to Boot: Windows Vista and Windows 7 (continued)

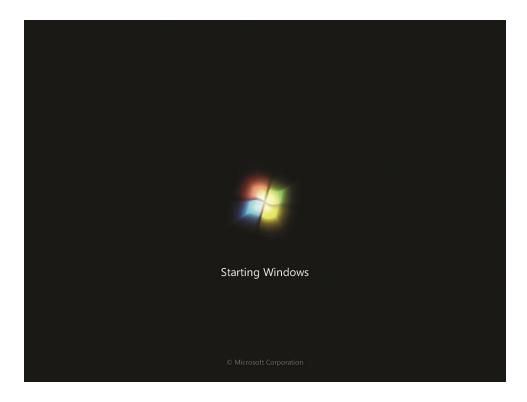
e Tools Help	
asyBCD Toolbox	Operating Systems
View Settings	Windows 🔬 Linux/BSD 📽 Mac 👸 NeoGrub
K Edit Boot Menu	Type:     Windows Vista/7       Name:     Microsoft Windows 7
Add New Entry	Drive: E:\
Advanced Settings	Add Entry
BCD Backup/Repair	Portable/External Media           Image: WinPE         Image: WinPE
🕜 Bootloader Setup	Type: WIM Image (Ramdisk)
_	Name: NST WinPE Image
Useful Utilities	Path:
	EMS Enabled Force portable entry

Figure 21: EasyBCD at work

#### **Failure to Load the GUI**

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#### Failure to Load the GUI



#### Figure 22: GUI time!

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### **Device Drivers**

- Device driver problems can stop Windows GUI from loading and may result in the infamous Windows Stop error, better known as the Blue Screen of Death (BSoD).
- Windows BSoDs tell you the name of the file that caused the problem and usually suggest a recommended action.
- BSoD problems due to device drivers almost always occur immediately after you've installed a new device and rebooted.

### **Device Drivers (continued)**

A problem has been detected and windows has been shut down to prevent damage to your computer.

NO\_MORE\_IRP\_STACK\_LOCATIONS

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure that any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

Technical information:

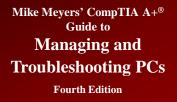
- \*\*\* STOP: 0x00000035 (0x0000000,0xF7E562B2,0x00000008,0xC00000000)
- \*\*\* wdmaud.sys Address F7E562B2 base at F7E56000, DateStamp 36B047A5

#### Figure 23: BSoD

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### **Device Drivers (continued)**

- Take out the device and reboot. If this fixes the problem, look for updated drivers at the manufacturer's web site.
- The second indication of a device problem that shows up during the GUI part of startup is a freeze-up: the Windows startup screen just stays there and you never get a chance to log on. If this happens, try one of the Advanced Startup Options.



### Registry

- The Registry files load every time the computer boots.
- If Windows attempts to load a bad Registry, these errors may show up as BSoDs that say "Registry File Failure" or text errors that say "Windows could not start."

### **Registry** (continued)

- You will to need to restore a good Registry copy.
  - The best way to do this is the Last Known Good Configuration boot option.
  - If that fails, you can restore an earlier version of the Registry through the Recovery Console in Windows XP or through Windows RE in Windows Vista/7.

### **Registry** (continued)

- Replacing the Registry in Windows XP
  - Boot to the Windows installation CD-ROM, get to the Recovery Console, and type these commands to restore a Registry:

delete c:\windows\system32\config\system

delete c:\windows\system32\config\software

delete c:\windows\system32\config\sam

delete c:\windows\system32\config\security

delete c:\windows\system32\config\default

copy c:\windows\repair\system c:\windows\system32\config\system copy c:\windows\repair\software c:\windows\system32\config\software copy c:\windows\repair\sam c:\windows\system32\config\sam copy c:\windows\repair\security c:\windows\system32\config\security copy c:\windows\repair\default c:\windows\system32\config\default



### **Registry** (continued)

- Replacing the Registry in Windows Vista/7
  - Windows Vista and Windows 7 keep a regular backup of the Registry handy in case you need to overwrite a corrupted Registry. By default, the RegIdleBackup task runs every 10 days, so that's as far back as you would lose if you replaced the current Registry with the automatically backed-up files.
  - You can find the backed-up Registry files in \Windows\System32\config\RegBack

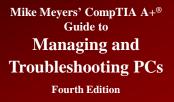
### **Registry** (continued)

- Replacing the Registry in Windows Vista/7 (continued)
  - To replace the Registry, boot to the Windows DVD to access Windows RE and get to the Command Prompt shell.
  - Run the reg command to get to a reg prompt.
  - From there, you have numerous commands to deal with the Registry. The simplest is probably the copy command.
  - Just copy the files to the location of the main Registry files—up one level in the tree under the \config folder.

### **Registry (continued)**

Organize 💌 Includ	le in library 👻 Share with 👻 Burn	New folder		•
Favorites	Name	Date modified	Туре	Size
	DEFAULT	5/9/2012 9:10 AM	File	4,964 KB
词 Libraries	SAM	5/9/2012 9:10 AM	File	36 KB
	SECURITY	5/9/2012 9:10 AM	File	36 KB
🖳 Computer	SOFTWARE	5/9/2012 9:10 AM	File	96,284 KB
• Network	SYSTEM	5/9/2012 9:10 AM	File	21,984 KB

Figure 24: The backed-up Registry files located in the RegBack folder



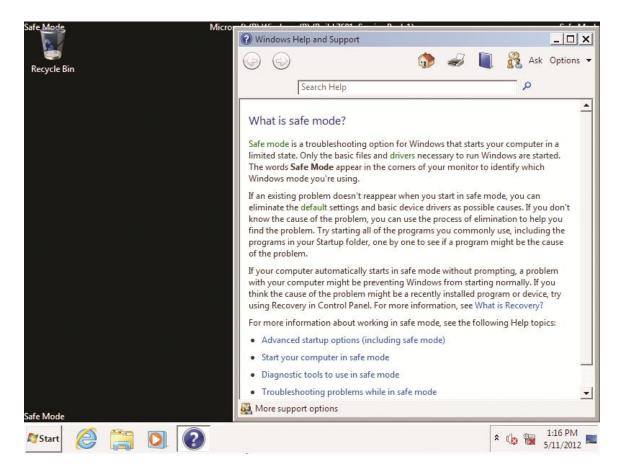
### **Advanced Startup Options**

- If Windows fails to start up, use the Windows Advanced Startup Options menu to discover the cause.
  - To get to this menu, restart the computer and press F8 after the POST messages but before the Windows logo screen appears.
  - Windows XP's Startup options are a bit different from Windows Vista's and Windows 7's.

# Advanced Startup Options (continued)

- Safe Mode (all versions)—starts up Windows but loads only very basic, non– vendor-specific drivers for the mouse, 640 × 480 resolution monitor (in XP) and 800 × 600 resolution monitor (Vista and 7), keyboard, mass storage, and system services.
  - Once in Safe mode you can use Device Manager to enable or disable devices.
  - There is no safety or repair feature in any version of Windows that makes the OS boot to Safe mode automatically—this has to be configured in msconfig.

### Advanced Startup Options (continued)



#### Figure 25: Safe mode

#### Advanced Startup Options (continued)

Windows 7 (C:\Windows) : Current OS; Default OS	
Advanced options     Set as default     Delete       Boot-options     Image: Safe boot     Image: No GUI boot	Timeout: 30 seconds
Minimat Boot log	Make all boot settings

#### Figure 26: Uncheck Safe boot

### Advanced Startup Options (continued)

- Safe Mode with Networking (all versions)—identical to Safe mode except that you get network support.
- Safe Mode with Command Prompt (all versions)—loads a Command Prompt (cmd.exe) as the shell to the operating system after you log on, rather than loading the GUI desktop. This is a handy option to remember if the desktop does not display at all.

#### Advanced Startup Options (continued)

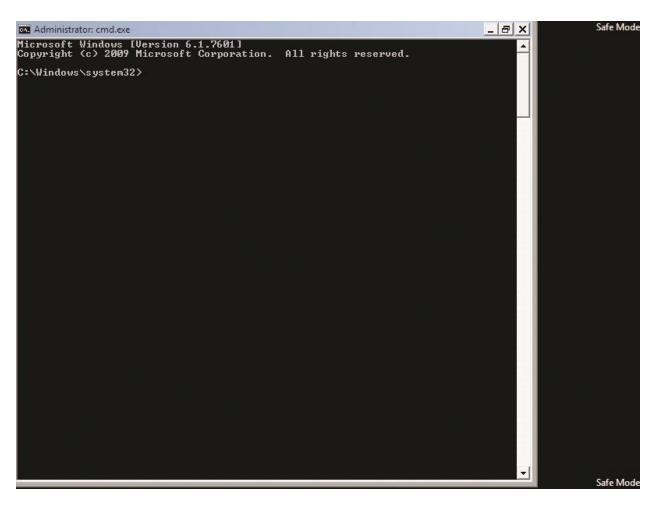


Figure 27: Safe Mode with Command Prompt

# Advanced Startup Options (continued)

- Enable Boot Logging (all versions)—starts Windows normally and creates a log file of the drivers as they load into memory. The file is named Ntbtlog.txt and is saved in the %SystemRoot% folder.
- Enable VGA Mode (XP)/Enable Low-Resolution Mode (Vista and 7)—starts Windows normally but loads only a default VGA driver. If this mode works, it may mean you have a bad driver, or it may mean you are using the correct video driver but it is configured incorrectly.

### Advanced Startup Options (continued)

- Last Known Good Configuration (all versions)—this is the option to try when Windows' startup fails immediately after installing a new driver but before you have logged on again. It applies specifically to new device drivers that cause failures on reboot.
- Directory Services Restore Mode (all versions)—applies only to Active Directory domain controllers.

### Advanced Startup Options (continued)

- Debugging Mode (all versions)—starts Windows in kernel debug mode.
- Disable Automatic Restart on System Failure (all versions)—stops the computer from rebooting on Stop errors and gives you the opportunity to write down the error and find a fix.

# Advanced Startup Options (continued)

- Disable Driver Signature Enforcement (Vista and 7)—if you are using an older driver to connect to your hard drive controller or some other low-level feature, you must use this option to get Windows to load the driver.
- Start Windows Normally (all versions) starts Windows normally, without rebooting.

### Advanced Startup Options (continued)

- Reboot (all versions)—performs a soft reboot of the computer.
- Return to OS Choices Menu (all versions)—returns you to the OS Choices menu, from which you can select the operating system to load.

# **Troubleshooting Tools in the GUI**

- Event Viewer is a powerful logging tool for troubleshooting and security.
  - In Windows XP Event Viewer is in the Administrative Tools applet in the Control Panel and has three sections: Application, Security, and System (four if you have IE7 or later).
    - The Application section stores events specific to applications. There are three types of events recorded: Errors, Warnings, and Information.

### **Troubleshooting Tools in the GUI (continued)**

File Action View Help						
🔁 🖪 🚰 🗟	} <b>  </b> ₽					
Event Viewer (Local)	Application 259	event(s)				
Application	Туре	Date	Time	Source	Category	1
Security		11/3/2006	4:04:48 AM	SceCli	None	
System	S Error	11/2/2006	12:32:35 PM	Userenv	None	1
Internet Explorer	( Information	11/2/2006	10:44:42	SceCli	None	~
	S Error	11/2/2006	10:42:35	Userenv	None	
	S Error	11/2/2006	9:07:34 AM	Userenv	None	
	S Error	11/2/2006	7:28:34 AM	Userenv	None	
	S Error	11/2/2006	5:45:34 AM	Userenv	None	
	S Error	11/2/2006	4:12:33 AM	Userenv	None	
	( Information	11/1/2006	4:53:37 PM	SceCli	None	
	S Error	11/1/2006	7:10:28 AM	Userenv	None	
	S Error	11/1/2006	5:25:28 AM	Userenv	None	
	( Information	11/1/2006	12:45:32	SceCli	None	
	() Information	10/31/2006	4:58:49 PM	iPod Service	None	
		10/31/2006	1:22:45 PM	MsiInstaller	None	
	Error	10/31/2006	12:33:26 PM	Application Hang	(101)	
		10/31/2006	9:09:31 AM	iPod Service	None	
	(1) Information	10/31/2006	9:08:31 AM	SecurityCenter	None	

Figure 28: Event Viewer

### **Troubleshooting Tools in the GUI (continued)**

File Action View	Help			
	Event Properties	<u> </u>		
Event Viewer (Loca	Event		Category	^
명 Security 영외 System 이상 Internet Explor	Date:       10/31/2006       Source:       Application Hang         Time:       12:33:26 PM Category:       (101)         Type:       Error       Event ID:       1002         User:       N/A       Image: Computer:       THUNDER         Description:       Event ID:       1002		None None None None None None	
	Hanging application OUTLOOK.EXE, version 11.0.5510.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000. For more information, see Help and Support Center at http://go.microsoft.com/fwlink/events.asp.		None None None None None	
	hungapp, version 0.0.0.0, hang address 0x00000000.	ang	None None None None	
	hungapp, version 0.0.0.0, hang address 0x00000000.	ang	None None None None None None (101)	*

Figure 29: Typical application error message

# **Troubleshooting Tools in the GUI (continued)**

- Event Viewer in Windows XP(continued)
  - The Security section records events, called audits, that have anything to do with security such as the number of logon events. All audits are listed as either successful or failed.
  - The System section is similar to the Application section in that you have Errors, Warnings, and Information, but the events listed here are specific only to the operating system.
  - Event Viewer will let you click the link to take you to the online Help and Support Center at Microsoft.com. The software reports your error, checks the online database, and comes back with a detailed explanation.

### **Troubleshooting Tools in the GUI (continued)**

Event Viewer				_ 🗆 🗙
File Action View	Help			
	Event Properties		? ×	
Event Viewer (Loca C	Event Viewer		-	Category 🔥
Security System	Event Viewer will send the	following information across the internet. Is	this OK?	None None
Internet Explor	Item Name	Value	~	None
I I	Category	(101)		None
	Company Name Date	Microsoft Corporation 10/31/2006		None
	Event ID	1002	~	None
I I	Don't ask me again (ah	wave send information)		None
		ways send information?		None
I I	6	Yes		None
			ang	
				None
	Data: <u>Bytes</u> <u>W</u> o		er	None
	0000: 41 70 70 6 0008: 69 6f 6e 2			>
	0010: 20 20 4f 5		~	
		OK Cancel	Apply	
			Phù I	

Figure 30: Details about to be sent

### **Troubleshooting Tools in the GUI (continued)**

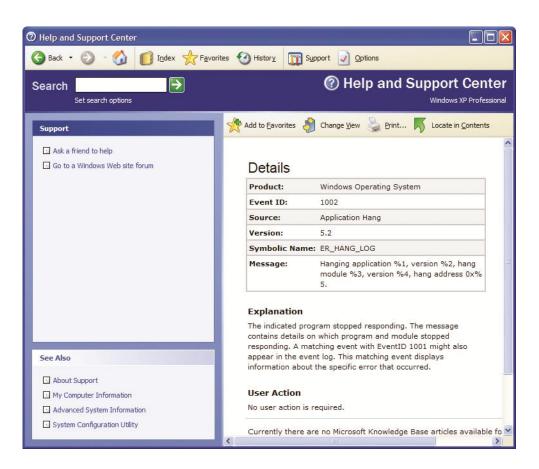


Figure 31: Help and Support Center being helpful

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### **Troubleshooting Tools in the GUI (continued)**

e Action View Help					
🔶 🗈 💽 😭 🗄	€ 🕄				
Event Viewer (Local)	Application 305	event(s)			
Application	Туре	Date	Time	Source	Ca
B Security	(S) Error	11/17/2006	8:56:07 PM	Userenv	No
System	Error	11/17/2006	7:01:07 PM	Userenv	No
	( Information	11/17/2006	9:51:07 AM	SceCli	No
	( Information	11/16/2006	4:33:02 PM	SceCli	No
	🔇 Error	11/16/2006	12:03:15 PM	crypt32	No
	S Error	11/16/2006	12:03:15 PM	crypt32	No
	S Error	11/16/2006	12:03:14 PM	crypt32	No
	Error	11/16/2006	12:03:14 PM	crypt32	No
	( Information	11/15/2006	11:10:57 PM	SceCli	No
	() Information	11/15/2006	6:07:55 AM	SceCli	No
	() Information	11/14/2006	12:22:48 PM	SceCli	No
	<b>S</b> Error	11/14/2006	7:25:46 AM	Userenv	No
	(S) Error	11/14/2006	5:46:45 AM	Userenv	No
	(S) Error	11/14/2006	3:55:45 AM	Userenv	No
	S Error	11/14/2006	2:05:44 AM	Userenv	No
	S Error	11/14/2006	12:33:44	Userenv	No
	( Information	11/13/2006	7:37:44 PM	SceCli	No
	<				>

Figure 32: Event Viewer in Windows XP showing some serious application errors!

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# **Troubleshooting Tools in the GUI (continued)**

- Windows Vista/7 adds an easy-to-use interface to Event Viewer.
  - Four main bars appear in the center pane: Overview, Summary of Administrative Events, Recently Viewed Nodes, and Log Summary.
  - The Summary of Administrative Events breaks down the events into different levels: Critical, Error, Warning, Information, Audit Success, and Audit Failure. You can then click any event to see a dialog box describing the event in detail. Microsoft refers to these as Views.

## Troubleshooting Tools in the GUI (continued)

nt Viewer (Local)	Event Viewer (Local)						Actions
<ul> <li>↓ Custom Views</li> <li>↓ Windows Logs</li> <li>↓ A pplications and Services Logs</li> <li>↓ Subscriptions</li> </ul>	node in the console	have occurred tree. The Adm An aggregate	on your computer, selec inistrative Events custon view of all the logs is sh	ct the appropriat	e source, log c		Event Viewer (Local)  Open Saved Log  Create Custom View  Import Custom View  Connect to Another Computer View
	Event Type       Event         Critical       -         ⊞ Error       -         ⊞ Marning       -         ⊞ Information       -         ⊞ Audit Success       -         Recently Viewed Nodes       -         Name       Windows Logs\Security         Windows Logs\Applicati       -         Log Summary       -         Log Name       -         ACEEventLog       -         Application       -         Cisco AnyConnect VPN       -         Hardware Events       -         Internet Evalorer       -	- - - - - - - - - - - - - - - - - - -	6/7/2011 8:44:12 AM 6/7/2011 8:44:12 AM Modified 6/7/2011 8:44:48 AM 6/7/2011 8:44:2 AM		Overwrite Overwrite Overwrite	7 days 0 240 125 3,043 544 Policy events as ne- events as ne- events as ne- events as ne-	<ul> <li>Refresh</li> <li>Help</li> </ul>

Figure 33: Windows 7 Event Viewer default screen

## Troubleshooting Tools in the GUI (continued)

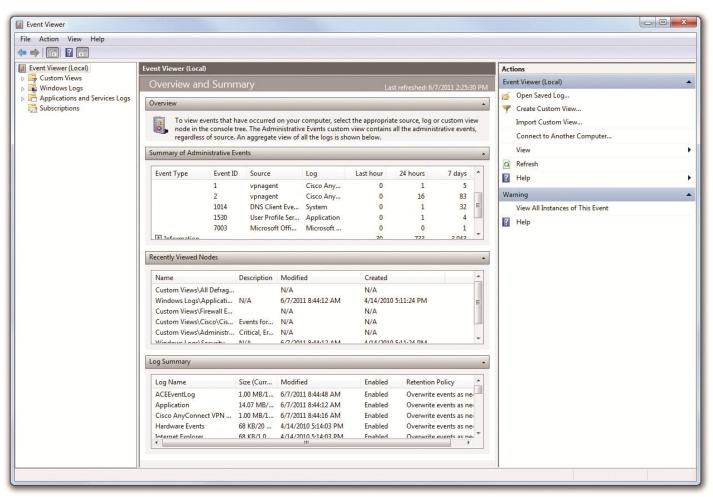


Figure 34: Warning Events open

## **Troubleshooting Tools in the GUI (continued)**

- Windows Vista/7 Event Viewer (continued)
  - Views filter existing log files, making them great for custom reports using beginning/end times, levels of errors, and more. You can use the built-in Views or easily create custom Views.
  - Logs in Windows 7 still have the same limitations that logs in earlier versions of Windows had. They have a maximum size, a location, and a behavior that occurs (such as overwrite the log or make an error) when they get too big.

## **Troubleshooting Tools in the GUI (continued)**

	Defrag Events N	umber of events: 261				Actions	
iews 🛛	Number of even	rs: 261				All	Defrag Events
	evel	Date and Time	Source	Event ID	Task Category	1	
rag Events	Information	6/6/2011 3:43:31 PM	Defrag	258	None	1	Create Custom View
Logs ns and Services Logs	Information	6/3/2011 12:02:10 PM	Defrag	258	None		Import Custom View
ins and services Logs	Information	6/1/2011 4:35:54 PM	Defrag	258	None	7	Filter Current Custom View
(	Information	6/1/2011 3:40:01 PM	Defrag	258	None		Properties
0	Information	6/1/2011 3:10:43 PM	Defrag	258	None	-	
0	Information	6/1/2011 2:24:58 PM	Defrag	258	None	86	Find
0	Information	6/1/2011 12:46:31 PM	Defrag	258	None		Save All Events in Custom View As
	Information	5/31/2011 9:26:38 AM	Defrag	258	None		Export Custom View
0	Information	5/27/2011 10:41:13 AM	Defrag	258	None		Copy Custom View
	Information	5/25/2011 2:11:15 PM	Defrag	258	None		and there are appeared and the
	Information	5/25/2011 12:00:02 PM	Defrag	258	None		Attach Task To This Custom View
	Information	5/23/2011 4:34:22 PM	Defrag		None		View
0	Information	5/20/2011 12:15:46 PM	Defrag	258	None 👻	×	Delete
Ev	rent 258, Defrag				×	١.	Rename
	General Details					Q	Refresh
	The disk defragmenter successfully completed boot optimization on (C:)					?	Help
						Eve	ent 258, Defrag
							Event Properties
						1	Attach Task To This Event
						1	Сору
	Log Name:	Application				Q	Refresh
	Source:	Defrag	Logged:	6/6/2011 3:43:31 PM		?	Help
	Event ID:	258	Task Category:	None			hep
	Level:	Information		Classic			
	User:	N/A		michaels-ws.totalhome			
		N/A	Computer:	michdels-ws.totdinome			
	OpCode:						
		Event Log Online Help					

Figure 35: Created custom Views

### **Troubleshooting Tools in the GUI (continued)**

eneral Subsc	tions	
Full Name:	Application	
Log path:	%SystemRoot%\System32\Winevt\Logs\Application.evtx	
Log size:	14.07 MB(14,749,696 bytes)	
Created:	Wednesday, April 14, 2010 5:11:24 PM	
Modified:	Tuesday, June 07, 2011 8:44:12 AM	
Accessed:	Wednesday, April 14, 2010 5:11:24 PM	
🕢 Enable log	ng	
Maximum lo	size ( KB ): 20480 🚊	
	m event log size is reached:	
	te events as needed (oldest events first) the log when full, do not overwrite events	
Contraction of the second second	overwrite events ( Clear logs manually )	
	Clear Log	,
	OK Cancel App	2

Figure 36: Log Properties dialog box in Windows 7

# **Troubleshooting Tools in the GUI (continued)**

- Autoloading programs—when one of the autoloading programs does not start properly, you need to shut off that program.
  - Use the System Configuration utility to temporarily stop programs from autoloading.
  - If you want to make the program stop forever, go into the program, find a load on startup option, and turn it off.

## **Troubleshooting Tools in the GUI (continued)**

File Edit View Playback Help	Spotify		
▲ ▶ Q * Search	EQO	🔊 Upgrade	
MABH	Size: • Automatic - use no more than 10% of free disk space • Use at most • 10 GB		
Devices	Proxy		
APPS App Finder 23 Top Lists (••) Radio	Auto-detect     +       Host:     Port:       Username:     Password:		
STOXEM BELLS	Social Network Connect to Facebook Open Spotify automatically after you log into the computer		
Your Head Is On Fire Broken Bells	<ul> <li>Open automatically</li> <li>Open automatically, but minimized</li> <li>Don't open automatically</li> <li>Allow Spotify to be started from the Web</li> </ul>		
••	1:04		02 × C

Figure 37: Typical load on startup option

# **Troubleshooting Tools in the GUI (continued)**

- Services—when any critical service fails to load, Windows tells you with an error message.
  - To work with your system's services, go to the Control Panel | Administrative Tools | Services and verify that the service you need is running—if not, turn it on.
  - Each service has a startup type—automatic, manual, or disabled—that defines when it starts. It's very common to find that a service has been set to manual when it needs to be set to automatic so that it starts when Windows boots.

## Troubleshooting Tools in the GUI (continued)

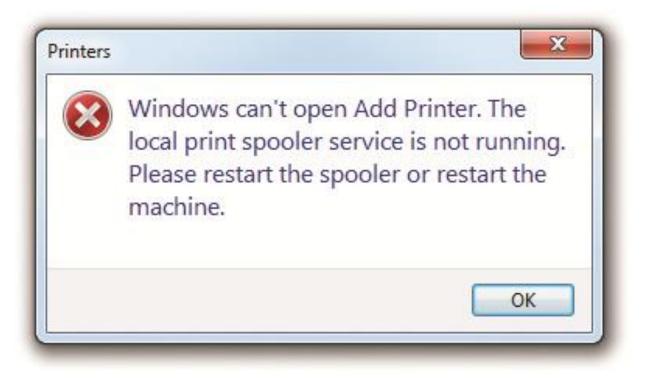


Figure 38: Service error

### **Troubleshooting Tools in the GUI (continued)**

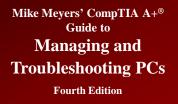
of 📮
•
ne

Figure 39: Autostarting a service



## **Troubleshooting Tools in the GUI (continued)**

- Task Manager and Command-Line Options
  - Task Manager enables you to see all applications or programs currently running or to close an application that has stopped working.
  - If you can't use the GUI version, go to a Command Prompt and type the command *tasklist* to find the names and process IDs of all the running processes. You can then run *taskkill* to end any process either by filename or by process ID.



## **Troubleshooting Tools in the GUI (continued)**

#### • System Files

 Use the System File Checker to check and replace a number of critical files, including the important DLL cache.

#### System Restore

 Use System Restore from the Windows Recovery Environment, or you can use restore points from within Windows.

### Troubleshooting Tools in Windows Vista and Windows 7

#### • Problem Reports and Solutions (Vista)

 The Problem Reports and Solutions Control Panel applet in Windows Vista lists all Windows Error Reporting issues (as well as firewall and antimalware status).

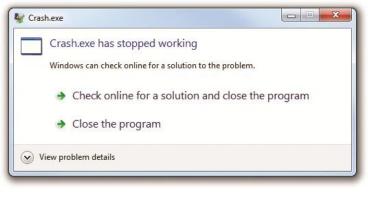


Figure 40: Crash.exe has stopped working.

Product	Problem	Date	Status
Desktop Window Manager	Stopped working	4/12/2012 10:26 AM	Not Reported
Driver software installation (2)	3-0PF-0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Driver software installation	Installed generic driver software	8/31/2010 11:59 AM	Not Reported
Driver software installation	Could not find driver software	8/31/2010 11:59 AM	Not Reported
Host Process for Windows Services —			
Host Process for Windows Servi	Windows Update installation problem	5/4/2011 10:59 AM	Not Reported
Konstantion SVGA 3D (Microsoft Corporation	ion - WDDM) (2)		
VMware SVGA 3D (Microsoft Co	Could not load driver software	8/31/2010 10:32 AM	Not Reported
VMware SVGA 3D (Microsoft Co	Could not load driver software	8/31/2010 11:31 AM	Not Reported

Figure 41: Problem Reports and Solutions

**Troubleshooting Tools in Windows Vista and Windows 7 (continued)** 

- Action Center (Windows 7) provides a one-page aggregation of event messages, warnings, and maintenance messages.
  - Action Center separates issues into two sections, Security and Maintenance, making it easier to scan a system quickly.
  - Action Center only compiles the information, taking data from well-known utilities such as Event Viewer, Windows Update, Windows Firewall, and UAC and placing it into an easy-to-read format.

#### **Troubleshooting Tools in Windows Vista and Windows 7 (continued)**

### • Action Center (continued)

 Links to most common tools (UAC, Performance Information and Tools, Backup and Restore, Windows Update, Troubleshooting Wizard, System Restore).

#### Troubleshooting Tools in Windows Vista and Windows 7 (continued)

					X
🔾 🖉 🚩 🕨 Control Panel 🕨	System and Security 🕨 Action Center	•	Search Control Panel		٩
Control Panel Home Change Action Center settings ② Change User Account Control	Review recent messages and resolve p Action Center has detected one or more issues for				0
settings View archived messages	Security			$\overline{\mathbf{v}}$	
View performance information	Maintenance				
	<b>Set up backup</b> Your files are not being backed up. Turn off messages about Windows Backup		🔞 Set	up backup	
	Check for solutions to problem reports Check for solutions   Privacy policy   Settin	gs   View reliability	On / history		
	Backup Your files are not being backed up.		Not set up		
	Check for updates Windows Update does not require any actio		tion needed		
	Troubleshooting: System Maintenance Windows is actively checking your system fo Change troubleshooting settings		tion needed oblems.		
See also Backup and Restore Windows Update Windows Program Compatibility Troubleshooter	If you don't see your problem listed, try one of the Troubleshooting Find and fix problems	se:	Recovery Restore your computer to a time	an earlier	

#### Figure 42: Action Center

#### Troubleshooting Tools in Windows Vista and Windows 7 (continued)

) • <b>*</b> «	System and Security  Action Center  Change Act	tion Center settings 👻 🗲	Search Control Panel	
	Turn messages on or off			
	For each selected item, Windows will check How does Action Center check for problem		problems are found.	
	Security messages			
	Windows Update	V Spyware and related prot	ection	
	Internet security settings	Vser Account Control		
	Vetwork firewall	Virus protection		
	Maintenance messages			
	Windows Backup	Check for updates		
	Windows Troubleshooting			
	Related settings			
	Customer Experience Improvement Pro	gram settings		
	Problem reporting settings			
	Windows Update settings			
		ОК	Cancel	

#### Figure 43: Change Action Center settings

#### Troubleshooting Tools in Windows Vista and Windows 7 (continued)

#### Performance Information and Tools

- The Performance Information and Tools applet doesn't fix anything. It just provides a comparison using the Windows Experience Index. Windows bases this on five components:
- Processor—calculations per second
- Memory (RAM)—memory operations per second
- Graphics—desktop performance for Windows Aero
- Gaming graphics—3-D graphics performance
- Primary hard disk—disk data transfer rate
- Each component generates a subscore. These values range from 1 to 5.9 for Windows Vista and 1 to 7.9 for Windows 7.

#### Troubleshooting Tools in Windows Vista and Windows 7 (continued)

All Control Par	nel Items 🕨 Performance Info	rmation and Tools 🔹 🗸	• Search Control Pan	et		
Control Panel Home Adjust visual effects Adjust indexing options	Rate and improve your computer's performance The Windows Experience Index assesses key system components on a scale of 1.0 to 7.9.					
Adjust power settings	Component	What is rated	Subscore	Base score		
Open disk cleanup Advanced tools	Processor:	Calculations per second	7.4			
Advanced tools	Memory (RAM):	Memory operations per second	7.4			
	Graphics:	Desktop performance for Windows Aero	7.2	5.9		
	Gaming graphics:	3D business and gaming graphics performance	7.2	Determined by lowest subscore		
	Primary hard disk:	Disk data transfer rate	5.9			
	What do the Tips for imp performance	View and print det system informatio	ailed performance a n			
	Learn more online	about scores and software				
See also Action Center	Your scores are current Last update: 6/7/2011 2:	35:12 PM		Re-run the assessm		

Figure 44: Performance Information and Tools

### **Application Problems**

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### **Application Installation Problems**

- Almost all Windows programs come with some form of installer.
- If you insert a software disc, Windows knows to look for a text file called autorun.inf that tells it which file to run off the disc, usually setup.exe.
- If you download the application, you'll need to double-click it to start the installation.

### **Application Installation Problems (continued)**

Control Panel		✓ 49 Sea	non		۶
<b>Tasks</b> View installed updates Get new programs online at Windows Marketplace	Uninstall or change a program To uninstall a program, select it from the list ar	nd then click "Uninstall", "Change", or	"Repair".		
View purchased software	🕘 Organize 🧭 🏢 Views 👒 🎭 Uninstall			1	?
(digital locker)	Name	Publisher	Installed On	Size	-
Turn Windows features on or off	Steam	Valve CollabNet	7/3/2007 3/25/2008	1.22 MB 17.7 MB	
Install a program from the network	Synergy	Valve	3/25/2009	2.26 MB	
	TightVNC 1.3.9	TightVNC Group TinyCAD	7/5/2007 3/23/2009	2.56 MB 5.26 MB	
	TmNationsForever	Nadeo	9/4/2009	717 MB	
	TortoiseSVN 1.6.6.17493 (32 bit)	TortoiseSVN	11/11/2009	18.2 MB	
	TrueCrypt	TrueCrypt Foundation	8/4/2008 7/5/2007	6.64 MB 24.6 MB	
	LC media player 1.0.0	VideoLAN Team VMware, Inc.	7/8/2009 6/15/2009	32.7 MB 337 MB	
	WMware vSphere Host Update Utility 4.0	VMware, Inc.	6/15/2009	34.8 MB	
	VMware Workstation     Import CLI	VMware, Inc. VMware, Inc.	9/10/2009 11/9/2009	393 MB 19.6 MB	3
	Winamp	Nullsoft, Inc	2/8/2008	19.0 MB	
	TortoiseSVN 1.6.6.17493 (32 bit) Pul	hlisher TortoiseSVN Co	mments: Windows Sl	hell Integration	

Figure 45: Programs and Features Control Panel applet

## **Application Installation Problems (continued)**

- With most installation issues, a problem with Windows prevents programs from installing, usually the lack of some other program that the application needs so it can operate.
  - The best example of this is the popular Microsoft .NET Framework.
  - .NET is an extension to the Windows operating system that includes support for a number of features, particularly powerful interface tools and flexible database access. If a program is written to take advantage of .NET, .NET must itself be installed.

## **Application Installation Problems (continued)**

- Installation issues (continued)
  - In most cases, if .NET is missing, the application should try to install it at the same time it is installed, but this may not happen.
  - If .NET is missing or if the version of .NET you are using is too old, you can get errors.
  - These types of errors usually require you to go online and do Web searches, using the application name and the error.

### **Application Installation Problems (continued)**

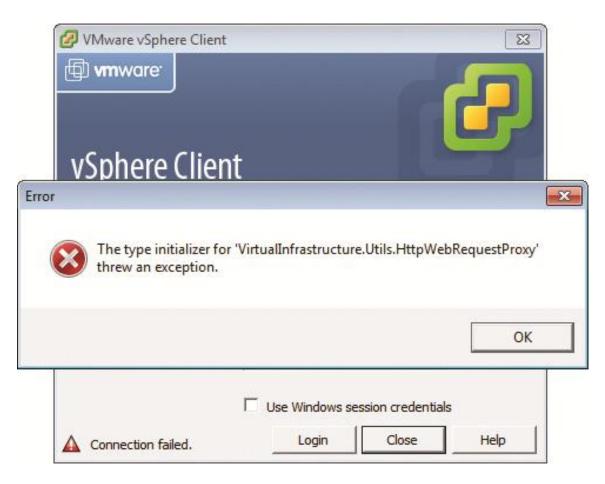


Figure 46: .NET error



## **Problems with Uninstalling**

- The single biggest problem with uninstalling is that people try to uninstall without administrator privileges.
  - If you try to uninstall and get an error, log back on as an administrator and you should be fine.
  - You can right-click on most installation menu options on the Programs menu and select Run as administrator to switch to administrator privileges.

### **Problems with Uninstalling** (continued)

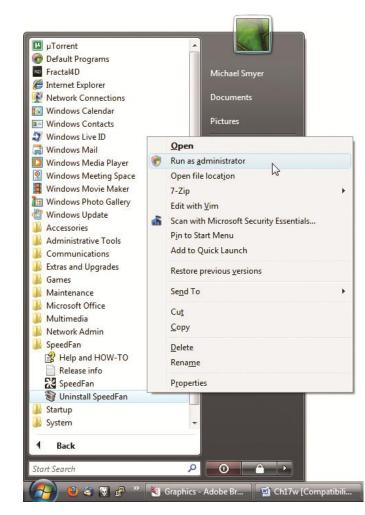


Figure 47: Selecting Run as administrator from the context menu

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## Compatibility

- As Windows versions change over time, older programs have difficulty running in more recent Windows versions.
- Windows XP, Windows Vista, and Windows 7 provide different forms of compatibility modes to support older applications.

## Compatibility (continued)

- Windows XP handles compatibility using the aptly named Compatibility tab in every executable program's Properties dialog box (right-click on the executable file and click Properties).
  - Select the version of Windows you want Windows
     XP to emulate, and in many cases that is all you need to do to make that older program work.
  - You can also set other settings on the Compatibility tab, such as the following located under Display settings:



## • Windows XP Compatibility tab (continued)

- Run in 256 colors—Many old Windows programs were designed to run in 256 colors. Later versions of Windows that support more colors can confuse these older programs.
- Run in 640 × 480 screen resolution—A few (badly written) older programs assume the screen to be at 640 × 480 resolution. This setting enables them to work.
- Disable visual themes—Windows themes change a program window's title bar, fonts, and menus, which might create problems for some programs.



томти	ME Prope	erties		?
General	Version	Compatibility	Summary	
an earl		of Windows, se	ogram and it wor elect the compat	ked correctly on ibility mode that
Com	patibility mo	de <u> </u>		
~	Run this pr	ogram in comp	atibility mode for	
W	indows 98	/ Windows Me		*
	ano se se	i colors I x 480 screen i ual themes	resolution	
Input	settings			
	Turn off ac	lvanced text se	rvices for this pr	ogram
Learn r	more about	program comp	atibility.	
		OK	Cance	Apply

Figure 48: XP Compatibility tab



General	Version	Compatibility	Summary		
an earl	ier version			worked correc npatibility mode	
Comp	patibility mo	de			
1	Run this p	ogram in comp	atibility mod	e for:	
Wi	ndows 98	/Windows Me		~	
Wi	ndows 95			A COLOR	
-D Wi Wi	ndows NT ndows 200		ack 5)	6	
	Run in 258	colors			
	Run in 640	) x 480 screen i	resolution		
	Disable vis	ual themes			
Input	settings				
	Tum off ac	lvanced text se	rvices for th	is program	
				ie program	
leamr	nore about	program comp	atibility		
countr		program comp	dubinty.		
		1.4	121.01	196	_

Figure 49: Compatibility mode options in Windows XP



 Windows Vista and Windows 7 add some important improvements to the Compatibility tab. Both add more recent OS options to the Compatibility mode drop-down menu.



the second second second second	Compatibility	Security	Details	Previous Versions
an earli natche		indows, se rsion.		l it worked correctly on compatibility mode that
Comp	atibility mode			
V	Run this program	m in compa	atibility mo	de for:
Win	ndows 98 / Wir	ndows Me		+
Wir	ndows 95 ndows 98 / Wir		N	
Wir Wir Wir Wir Wir Wir	ndows XP (Serv ndows XP (Serv ndows Server 2 ndows Vista ndows Vista (Se ndows Vista (Se ndows 7	vice Pack 3 2003 (Servi 2008 (Servi ervice Pack	3) ce Pack i ce Pack i k 1)	
	ege Level Run this progra	m as an ad	lministrato	r

Figure 50: Compatibility mode options in Windows 7



- The newer Compatibility tab also adds some new options to help older programs run:
  - Disable desktop composition—Disables all display features such as Aero. More advanced Windows display features often bog down older programs.
  - Disable display scaling on high DPI settings—Turns off automatic resizing of a program's windows if you're using any high DPI (dots-per-inch) font. This was added because many programs with large fonts would look bizarre if resized.

## Compatibility (continued)

- The newer Compatibility tab (continued)
  - Run this program as an administrator—As stated, enables you to run the program as an administrator. If this option isn't available, log on as an administrator to see it.
  - Change settings for all users—Clicking this button applies compatibility changes made to a program to every user account on the machine. Otherwise, the settings are only for the current user.



# **Compatibility** (continued)

If you have problems with this program and it worked correctly o an earlier version of Windows, select the compatibility mode that matches that earlier version. <u>Help me choose the settings</u> Compatibility mode I Run this program in compatibility mode for: <u>Windows 98 / Windows Me</u> Settings Run in 256 colors Run in 256 colors Run in 640 x 480 screen resolution Disable visual themes Disable desktop composition Disable display scaling on high DPI settings		Security	Details	Previous Versions
Compatibility mode Run this program in compatibility mode for: Windows 98 / Windows Me Settings Run in 256 colors Run in 640 x 480 screen resolution Disable visual themes Disable desktop composition	n earlier version of atches that earlier	Windows, se version.		
Windows 98 / Windows Me         Settings         Run in 256 colors         Run in 640 x 480 screen resolution         Disable visual themes         Disable desktop composition				
Settings          Run in 256 colors         Run in 640 x 480 screen resolution         Disable visual themes         Disable desktop composition	🔽 Run this prog	Iram in compa	tibility mo	de for:
<ul> <li>Run in 256 colors</li> <li>Run in 640 x 480 screen resolution</li> <li>Disable visual themes</li> <li>Disable desktop composition</li> </ul>	Windows 98 / V	Nindows Me	1	•
<ul> <li>Run in 256 colors</li> <li>Run in 640 x 480 screen resolution</li> <li>Disable visual themes</li> <li>Disable desktop composition</li> </ul>				
<ul> <li>Run in 640 x 480 screen resolution</li> <li>Disable visual themes</li> <li>Disable desktop composition</li> </ul>	Settings			
<ul> <li>Disable visual themes</li> <li>Disable desktop composition</li> </ul>	Run in 256 c	olors		
Disable desktop composition	📃 Run in 640 x	480 screen n	esolution	
	🔲 Disable visua	themes		
Disable display scaling on high DPI settings	📃 Disable deskt	top compositi	on	
	📰 Disable displa	ay scaling on	high DPI	settings
Privilege Level	Privilege Level			
Run this program as an administrator	🔲 Run this prog	i <mark>ram as an ad</mark>	ministrato	r
Change settings for all users	🛞 Change settir	ngs for all use	rs	

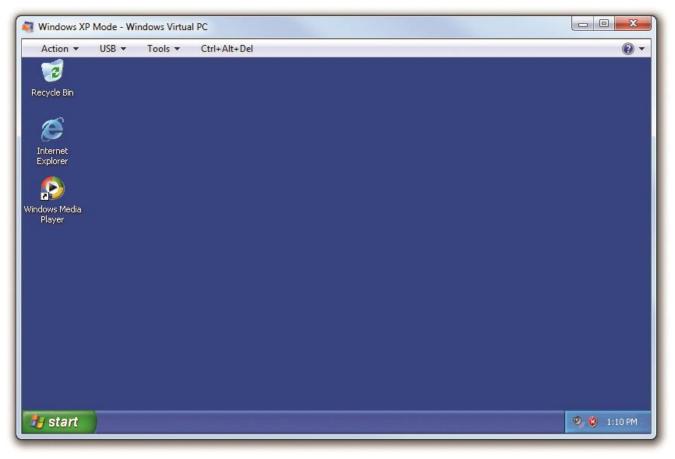
Figure 51: Windows 7 Compatibility tab

# Compatibility (continued)

- If you need to make things 100 percent compatible with Windows XP and you have Windows 7 (Professional, Ultimate, and Enterprise only) installed on your system, you can download Windows XP Mode.
  - Windows XP Mode is nothing more than a premade Windows XP SP3 virtual machine that runs under Microsoft's popular (and free) virtualization program, Windows Virtual PC.



# Compatibility (continued)



#### Figure 52: Windows XP Mode

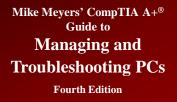
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### **Missing File or Incorrect File Version**

- An application may rely on other files, in particular DLL files.
- Sometimes the application installer will bring specially formatted versions of common DLL or other files to Windows, overwriting the previous versions.
- Later applications might look for the earlier version of the DLL and fail when it's not found.

## Missing File or Incorrect File Version (continued)

 The usual fix for either issue is to perform an Internet search for the missing DLL or file that fails to open, along with the name of the program you're trying to use.



- Sometimes error-prone code causes the application to crash or even causes the operating system to crash.
- Symptoms caused by such programs are the computer locking up, unexpectedly shutting down, or a crash-to-desktop (CTD).
- The system might spontaneously shut down and restart. That kind of improper shutdown can cause problems, especially to open files and folders.



 In some cases, where the program runs but degrades the overall performance of Windows, it could point to the application side of things rather than the hardware or drivers, especially if the computer successfully runs other programs.

### Volume Shadow Copy Service and System Protection

- Sometimes it isn't the application itself but any data it may have corrupted.
- Microsoft introduced in Windows Vista (Business, Ultimate, and Enterprise only) and Windows 7 (all editions) a feature called System Protection.
- This feature is powered by Volume Shadow Copy Service (VSS), a feature introduced in Windows XP and used by ntbackup.

Volume Shadow Copy Service and System Protection (continued)

- VSS enables the OS to make backups of any file, even one in use. In Vista/7, VSS is also used by System Protection, enabling access to previous versions of any data file or folder.
- If any of the following criteria are met, you will have at least one previous version in the list:
  - The file or folder was backed up using the backup program.
  - You created a restore point.
  - The file or folder was changed.

#### Volume Shadow Copy Service and System Protection (continued)

aneral 😽 Su	ubversion Security Details	Previous Versions
	evious versions come from res ckup. <u>How do I use previous</u>	
	runtad ∙tik	
File versions:		
Name	Date modified	Location
Last we	ek (1)	
JIntF	4/30/2012 10:26 AM	Restore point
<ul> <li>Earlier t</li> </ul>	his year (1)	
JIntF	2/28/2012 11:42 AM	Restore point
	Open	Copy Restore

Figure 53: Previous Versions tab

Volume Shadow Copy Service and System Protection (continued)

 You must make sure System Protection is enabled as well. Go to the System Protection tab in the System Properties dialog box to see if the feature is enabled (it should be running by default).

#### Volume Shadow Copy Service and System Protection (continued)

Computer Name	Hardware	Advanced	System Protect	tion Remote
			nwanted system What is system	
System Restore				
You can undo				stem Restore
Available Dr	ives			
🚢 Local Dis	sk <mark>(</mark> C:) (Syster	n)	Protection	>
Local Dis			On	
	ore settings, r		On	Configure
Configure rest	ore settings, r store points. re point right	manage disk	On	

Figure 54: System Protection tab