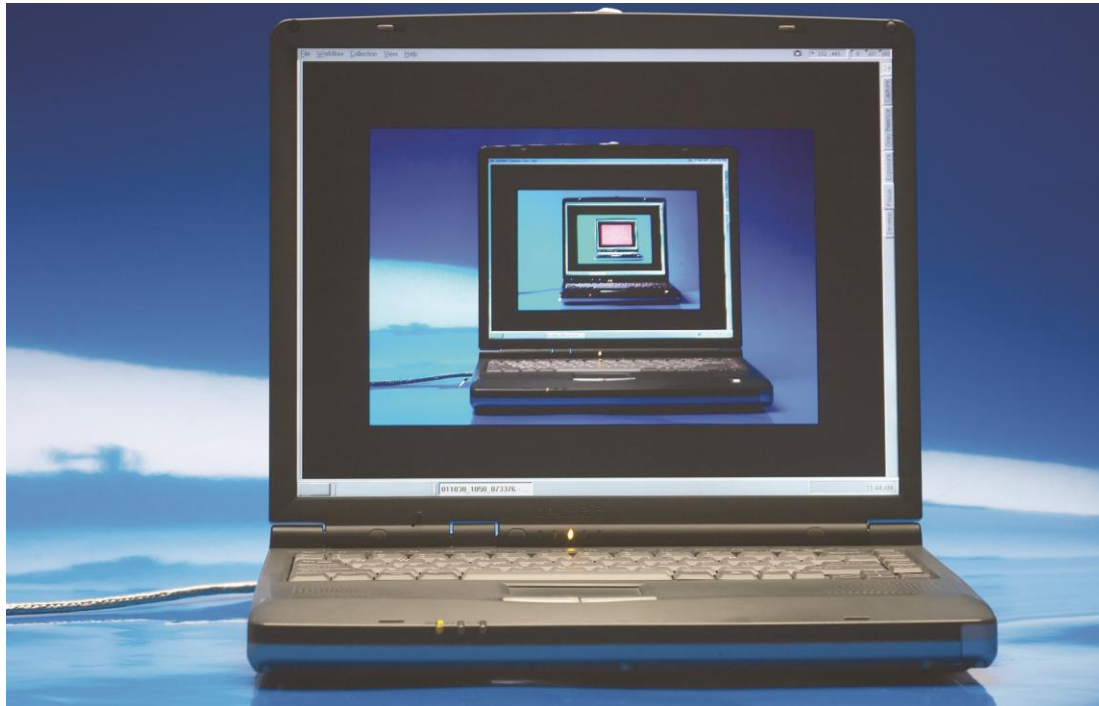


Visible Windows

Chapter 4



Overview

- **In this chapter, you will learn how to**
 - Relate the history of Microsoft Windows
 - Explain the Windows interface
 - Identify the operating system folders of Windows XP, Windows Vista, and Windows 7
 - Describe the utilities in Windows that are essential to techs

Versions of Windows on the CompTIA A+ exams

Windows Family	Versions (32-bit)	Versions (64-bit)
Windows XP	Windows XP Home	Windows XP 64-bit ver.
	Windows XP Professional	Windows XP Professional x64 edition
	Windows Media Center	
Windows Vista	Windows Vista Home Basic / Premium	Windows Vista Home Basic / Premium
	Windows Vista Business	Windows Vista Business
	Windows Vista Ultimate	Windows Vista Ultimate
	Windows Vista Enterprise	Windows Vista Enterprise
Windows 7	Windows 7 Starter	Windows 7 Home Premium
	Windows 7 Home Premium	Windows 7 Professional
	Windows 7 Professional	Windows 7 Ultimate
	Windows 7 Ultimate	Windows 7 Enterprise

Versions of Windows on the CompTIA A+ exams (*continued*)



Figure 1: Lots of Windows!

Brief History of Microsoft Windows

- **Windows 3.x**

- Graphic overlay of DOS

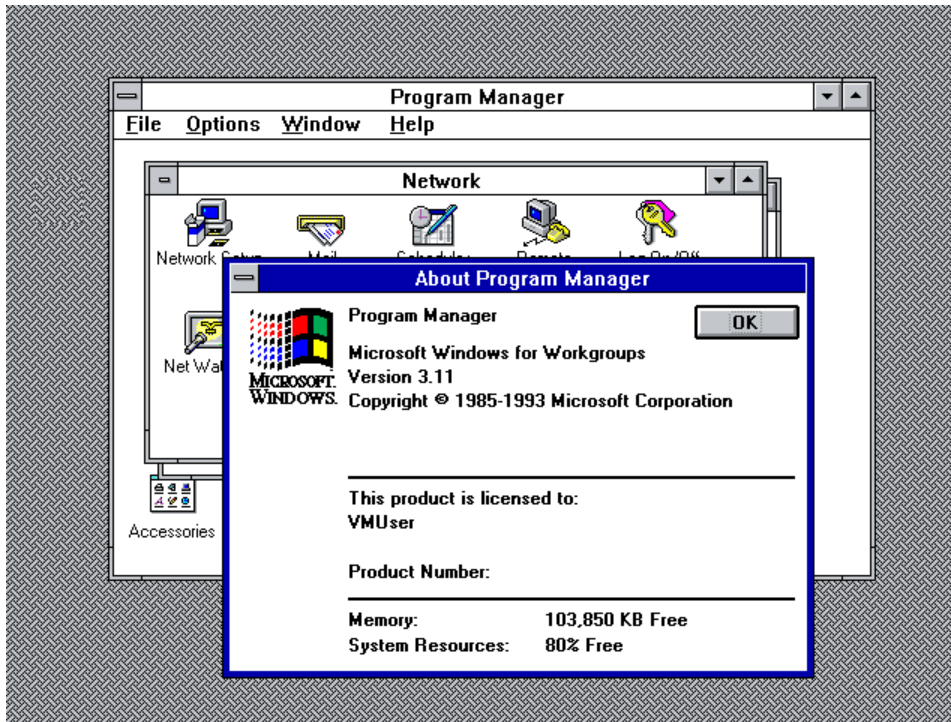


Figure 2: Windows for Workgroups

- **Windows NT**

- First true Windows OS

- Primarily used in high-end systems
- Replaced FAT with NTFS

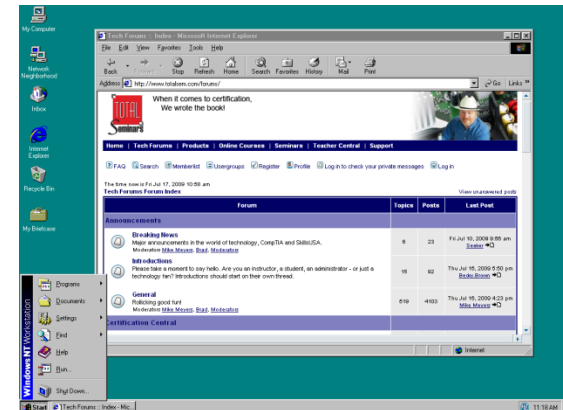


Figure 3: Windows NT 4.0

Brief History of Microsoft Windows (*continued*)

• Windows 9x

- First version of Windows for typical users
- Multiple versions, such as 95, 98, 98 SE, and Me



Figure 4: Windows 95—the Windows of your forefathers

Windows 2000

- **Based on Windows NT, but with a better interface**
- **Included support for NTFS**
- **Came in Professional and Server versions**

Windows XP

- **Replaced both Windows 2000 and 9x as the desktop for both home and office**
- **Multiple versions, such as Professional, Home, and Media Center**

Windows XP Professional

- **Big claim to fame: Windows domains**
- **Mainstream edition of XP**

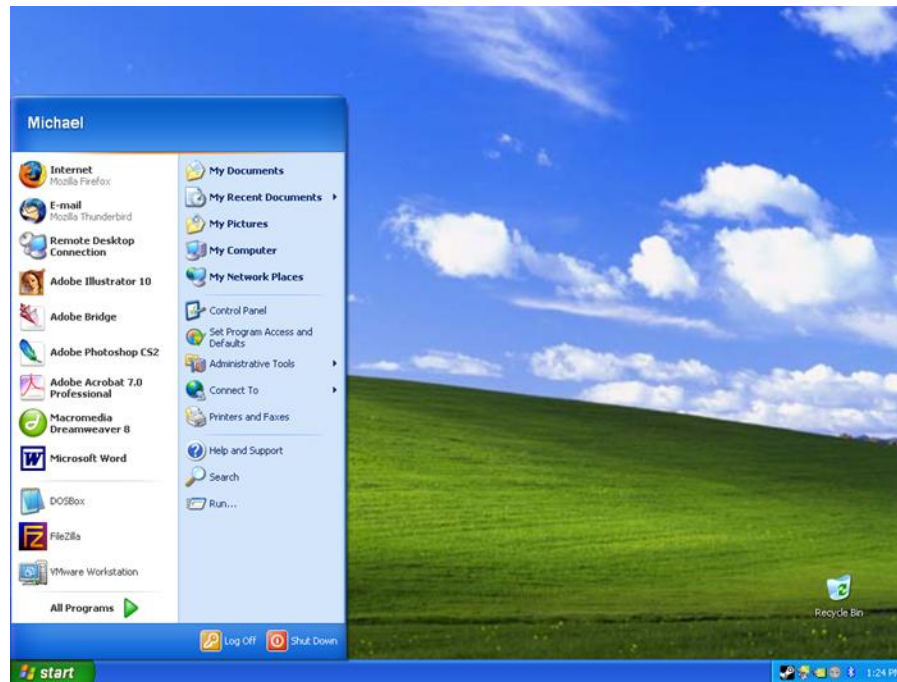


Figure 5: Windows XP Professional

Windows XP Home

- **Easier to explain what Home can't do compared to Professional**
 - No Windows domains
 - No encrypting file system
 - No support for more than one processor
 - No support for Remote Desktop
 - Cripples NTFS support – simple file sharing
 - No group policies

Windows XP Home (continued)

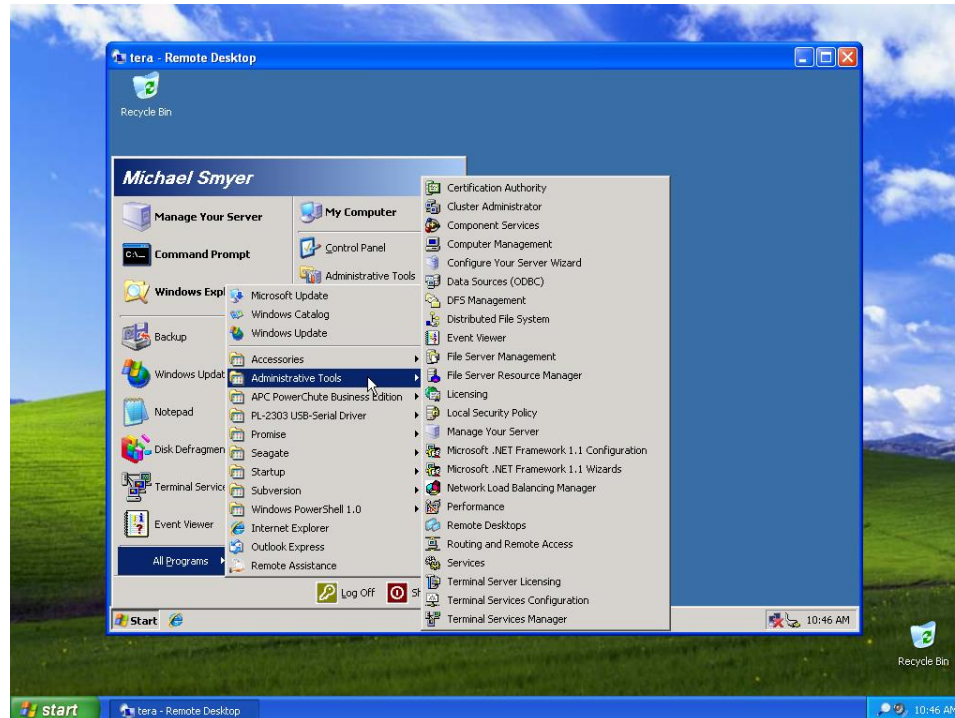


Figure 6: Remote Desktop

Windows XP Home (continued)

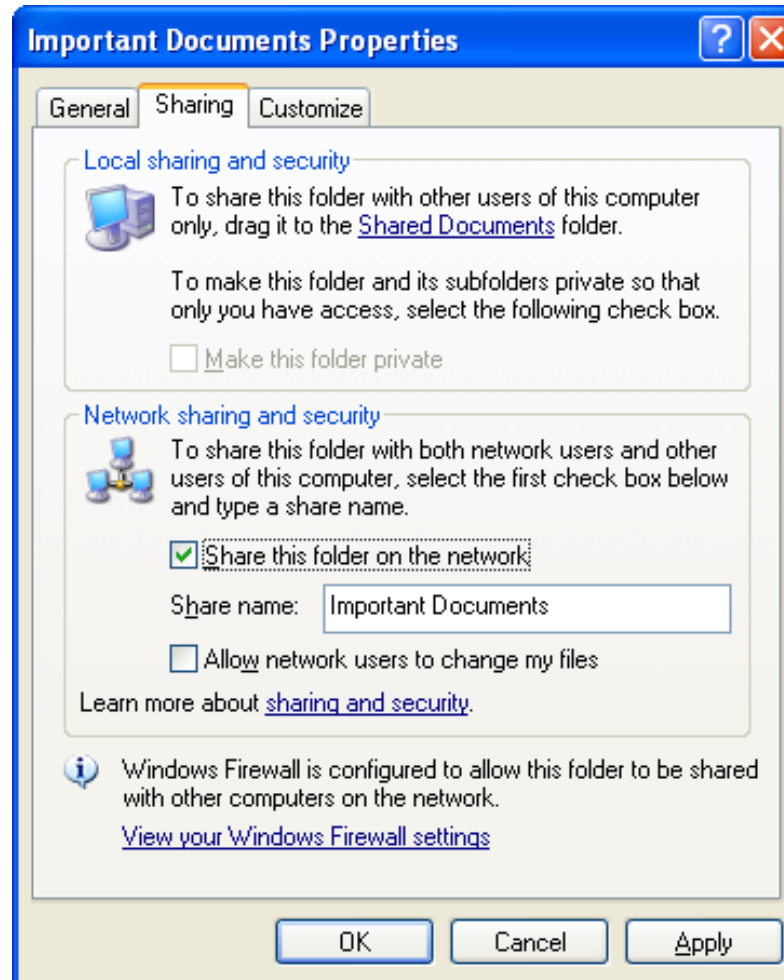


Figure 7: Windows XP Home Sharing tab

Windows Media Center

- **Same as Home, but adds Media Center**



Figure 8: Windows XP Media Center

Windows Vista

- **Vista Home Basic**
 - Like XP Home, geared to basic home users
- **Vista Home Premium**
 - Home Basic with upgraded multimedia applications

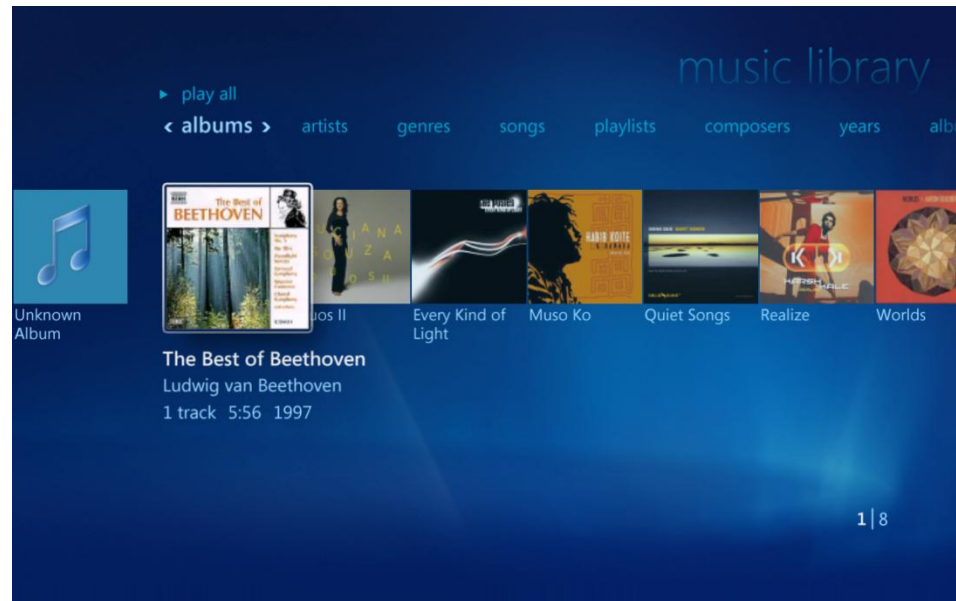


Figure 9: Vista Home Premium Media Center

Windows Vista (*continued*)

- **Vista Business**
 - Basic business version with security, file sharing, and domain access
- **Vista Ultimate**
 - Includes all other version features, plus more
- **Vista Enterprise**
 - enhanced Vista Business
 - includes extra features like BitLocker Drive Encryption

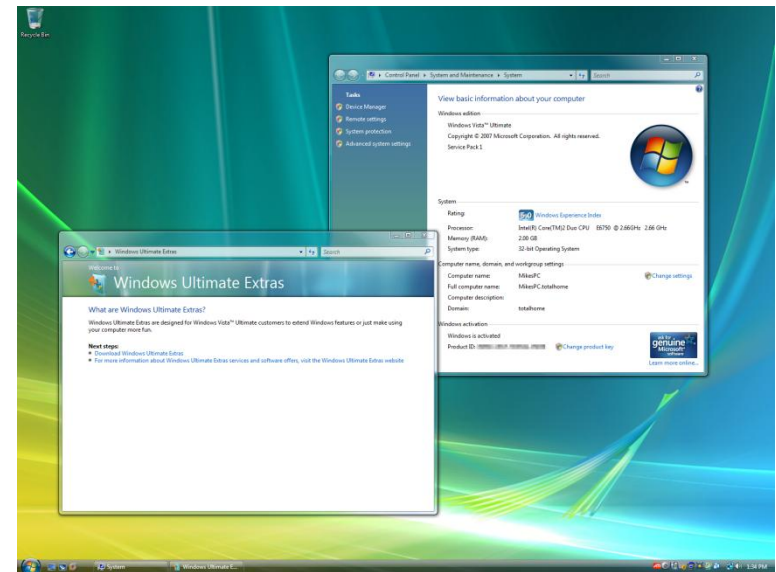


Figure 10: Vista Ultimate

Windows 7

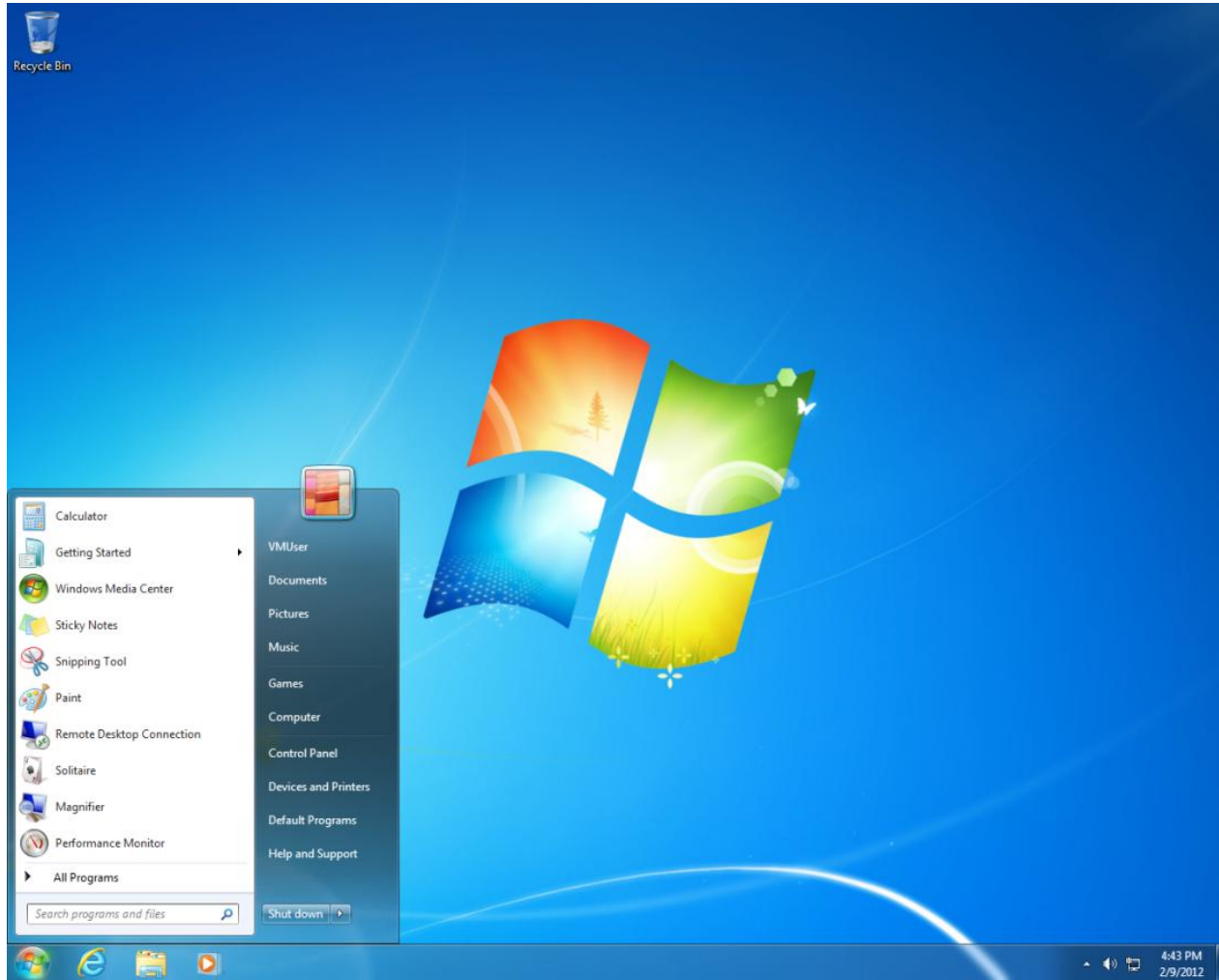


Figure 11: The Windows 7 desktop

Windows 7 (*continued*)

- **The "fixed" version of Vista**
- **Windows 7 Starter**
 - Stripped down version intended for netbooks
- **Windows 7 Home Premium**
 - Most basic and most widely released edition of Windows 7, includes a lot of media functionality and some advanced network functions
- **Windows 7 Professional**
 - Adds support for joining domains, XP mode, and Remote Desktop Connection
- **Windows 7 Ultimate**
 - everything that Windows 7 has to offer

Windows 7 (*continued*)

- **Windows 7 Enterprise**

- Very similar to Windows Vista Enterprise and can only be purchased directly from Microsoft. It includes extra features designed for large Windows businesses, such as enhanced network searches, increased application security, and data protection using BitLocker.

Enter 64-bit Windows

- **64-bit CPUs came after 2001**
 - Allow addressing of up to 16 TB of RAM
- **32-bit CPUs allow access to only 4GB of RAM**
- **x86 designates the 32-bit architecture**
- **x64 designates the 64-bit architecture**

Enter 64-bit Windows (*continued*)

- **Windows XP Professional x64 Edition**
 - Runs on any AMD or Intel processor that supports both 32 bits and 64 bits
- **All Windows Vista and 7 editions have x64 versions except for Windows 7 Starter**
- **Most 32-bit software runs fine in 64-bit OS**
 - Some software requires emulation, called **Compatibility Mode**:
 - Right-click an executable and select Properties.
 - Select Compatibility tab.



Figure 12: Windows XP Professional x64 Edition

Enter 64-bit Windows (continued)

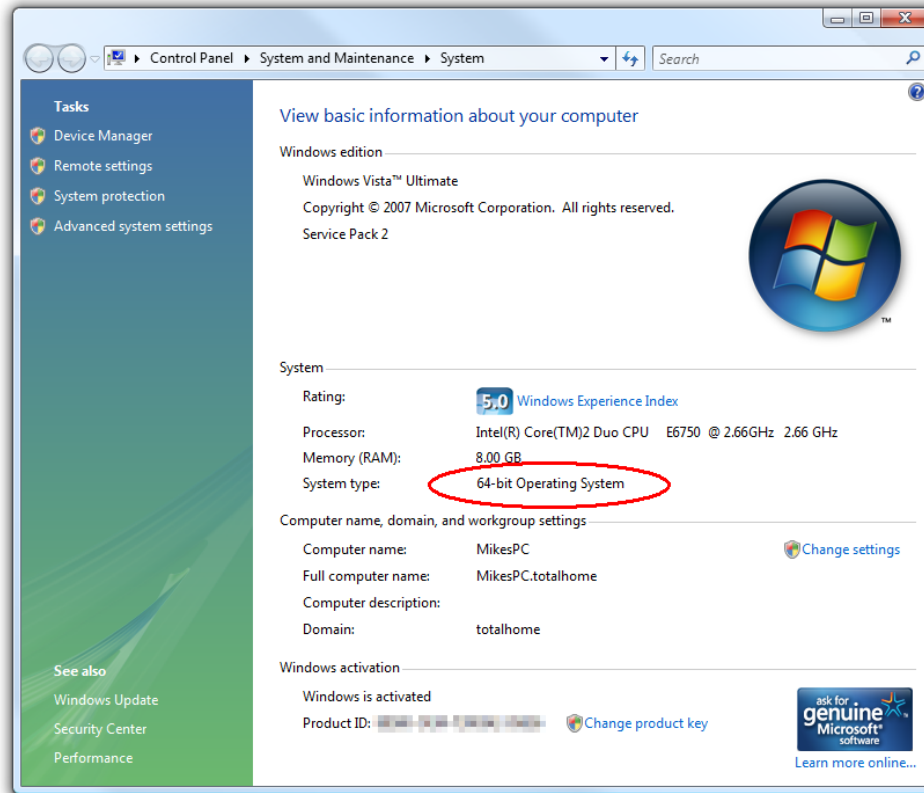


Figure 13: 64-bit Vista

Enter 64-bit Windows (continued)

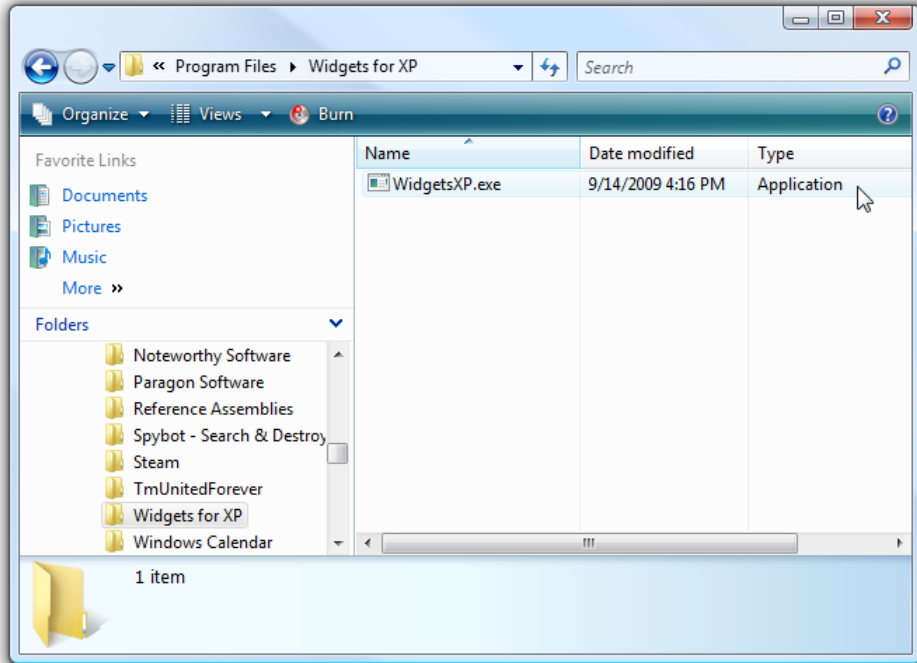


Figure 14: Finding an executable file

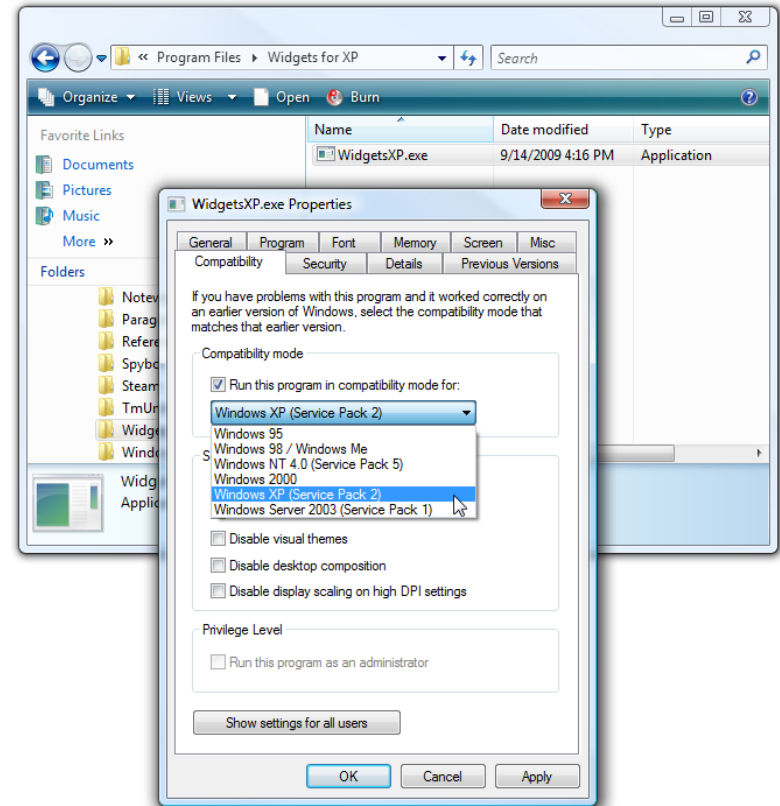


Figure 15: Compatibility mode options

Windows Interface

- **All versions share common look and feel**
 - Utilities same or similar
 - GUI works the same
 - Command-line interface has similar commands
 - Master one, and you're well on your way to mastering them all

- **Three areas of interest**
 - Common user interface
 - Tech-oriented utilities
 - Typical OS folders

User Interface

- **Logon screen (XP Pro in a domain)**
- **Welcome Screen (XP Home and Pro not in a domain, Windows Vista, and Windows 7)**



Figure 16: Windows XP logon screen

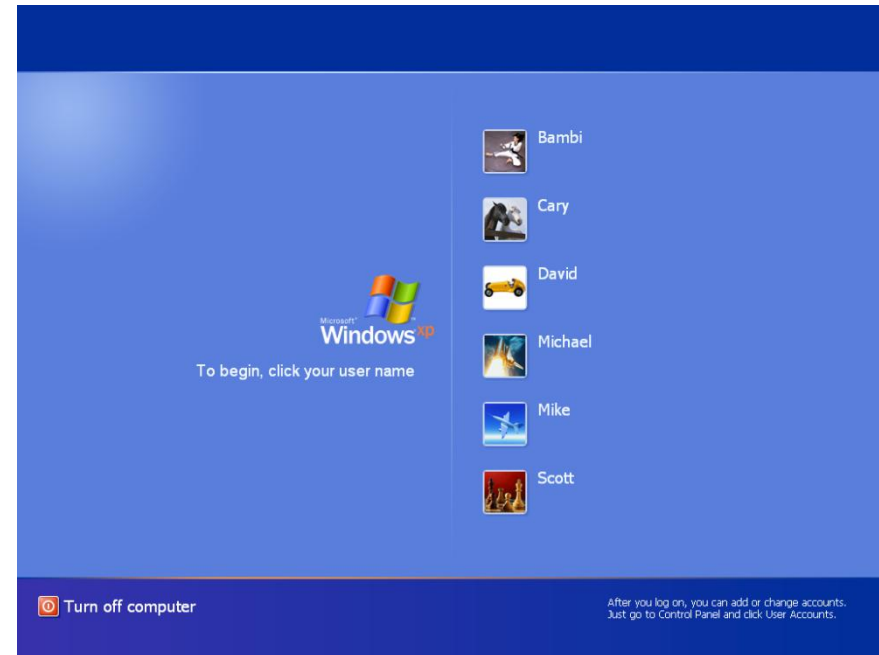


Figure 17: Windows XP Welcome screen

User Interface (*continued*)



Figure 18: Windows XP domain logon screen



Figure 19: Windows 7 Welcome screen

Desktop

- **The primary interface to the computer; allows users to customize it**



Figure 20: Windows XP desktop

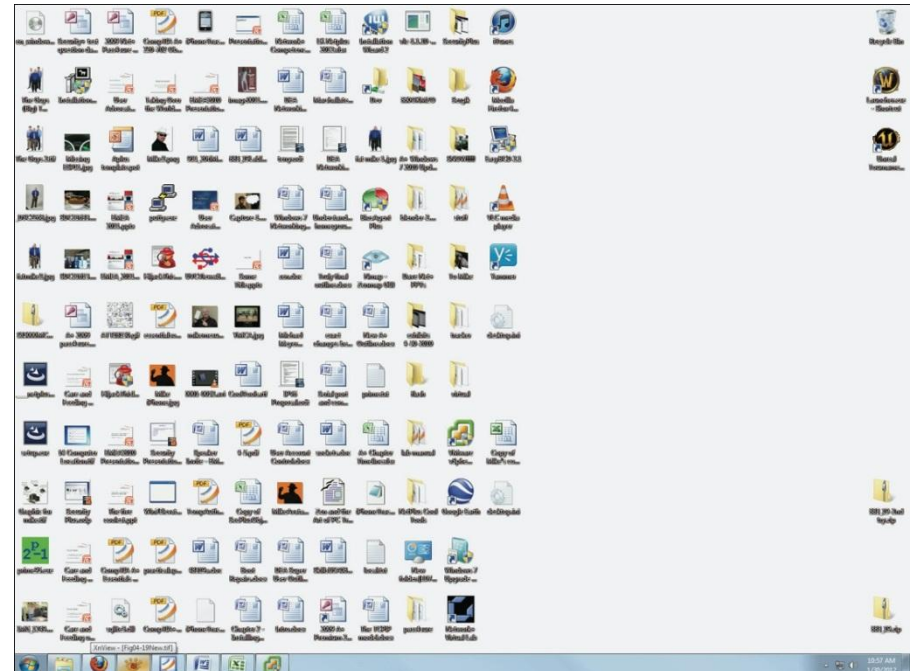


Figure 21: Mike's messy desktop

Aero Desktop

- **Unique to Vista and Windows 7**
 - Transparency
 - Flip 3D

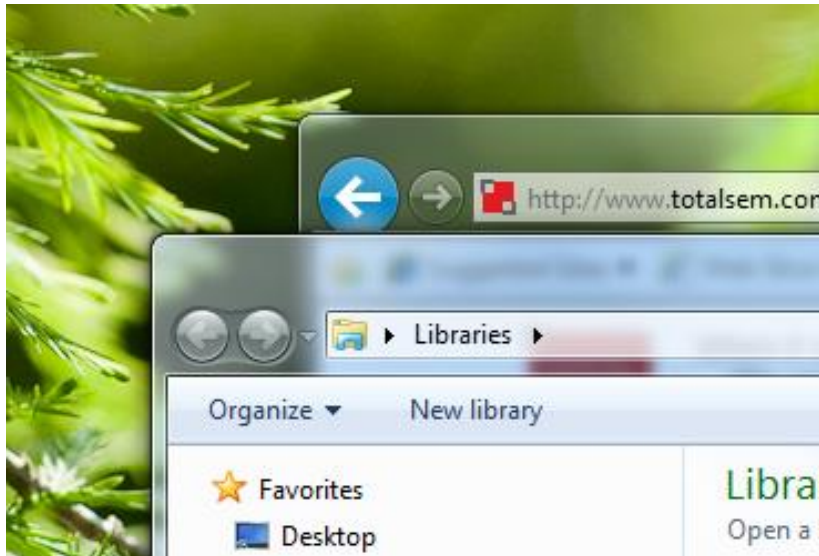


Figure 22: Transparency

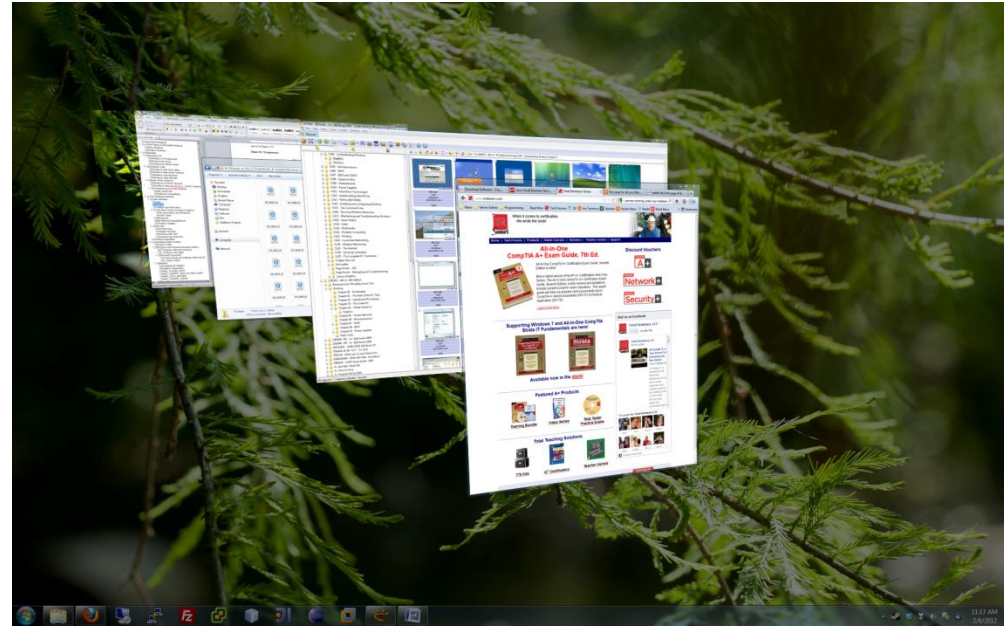


Figure 23: Flip 3D

Aero Desktop (*continued*)

- **Hardware requirements**
 - DirectX 9 capable video card or better
 - 128 MB of video RAM
 - Windows Display Driver Model (WDDM) driver
 - Pixel Shader version 2.0
- **Hot keys**
 - WINDOWS KEY-TAB to open and cycle
 - WINDOWS KEY-TAB-SHIFT to cycle backward

Testing for Aero

- **If WINDOWS KEY-TAB works, you have Aero**
- **Right-click desktop, select Personalize, and then Windows Color and Appearance**

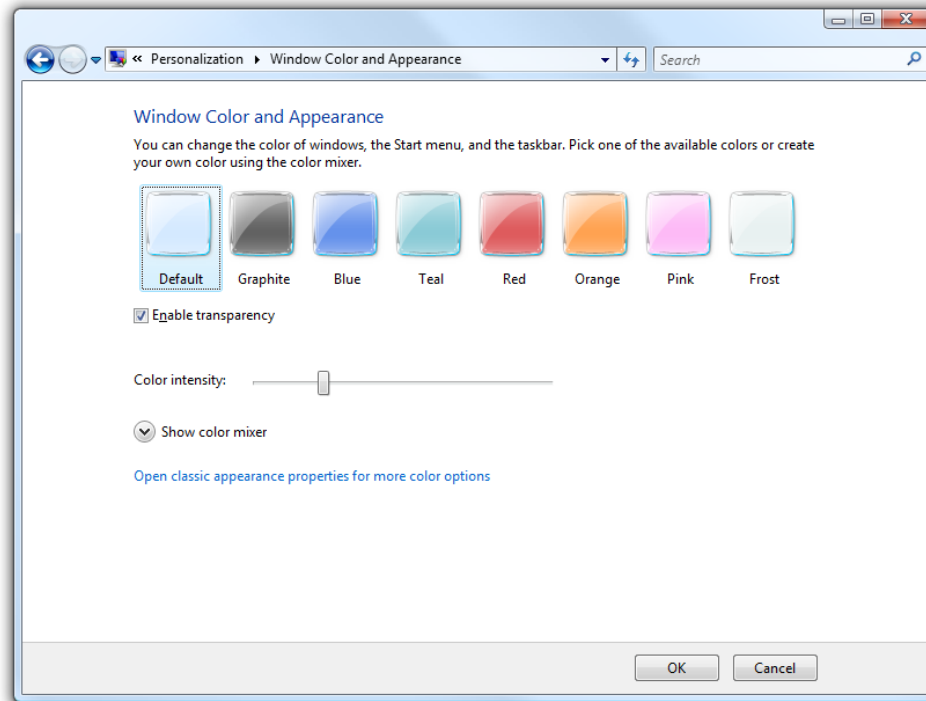


Figure 24: You've got Aero!

Testing for Aero (*continued*)

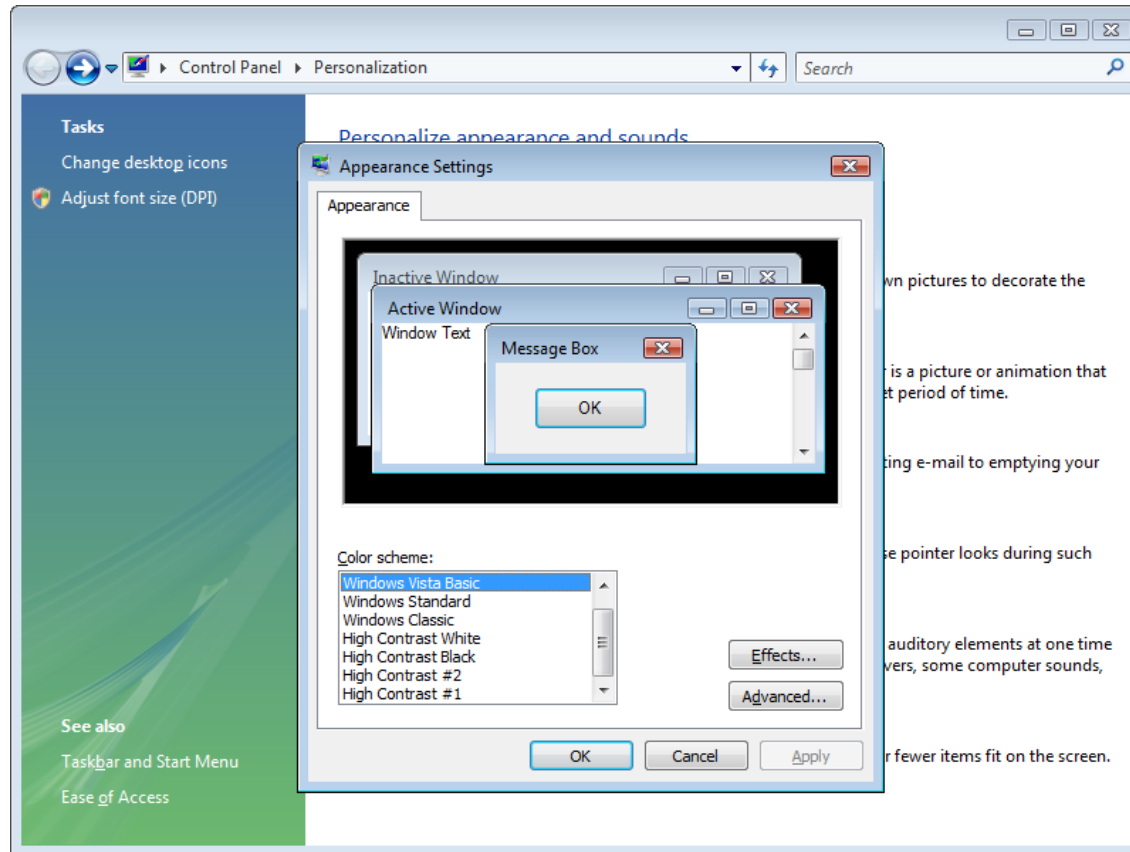


Figure 25: The lack of transparency and the flat window with no drop shadow show that Aero is not activated.

Aero Desktop

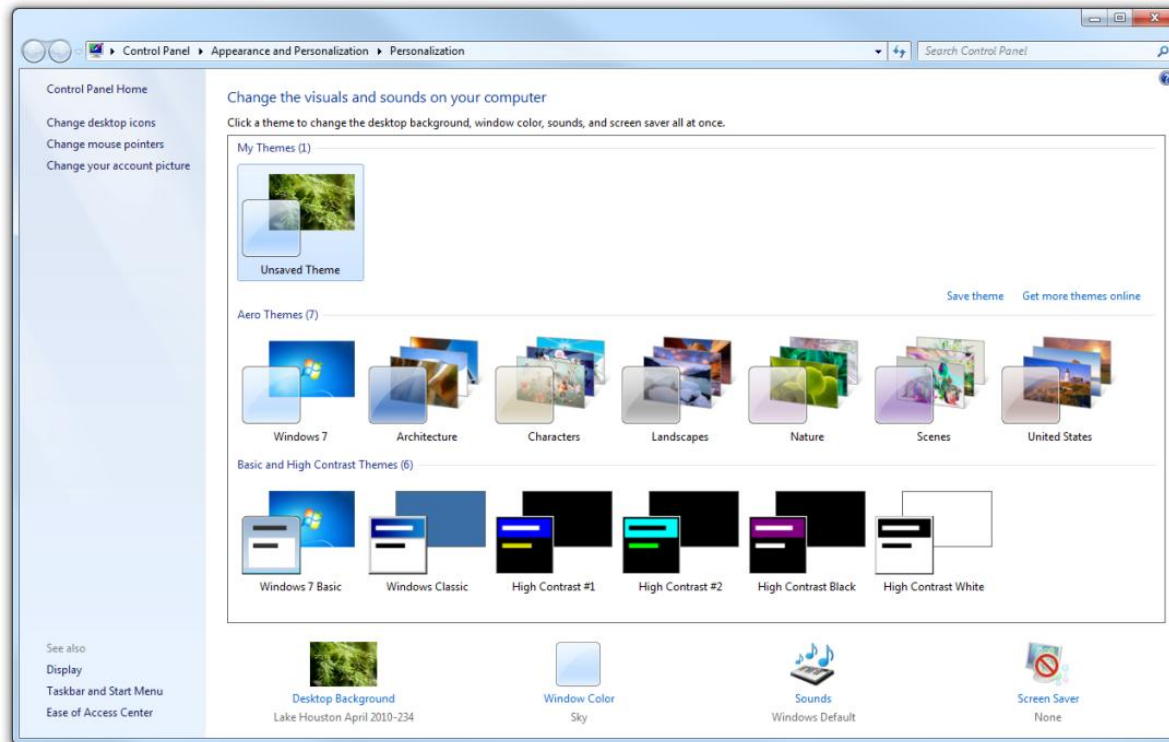


Figure 26: Select one of the Aero themes to activate the Aero Desktop in Windows 7.

Taskbar and Start Menu



Figure 27: Three different Windows Start buttons.

- **Start Button accesses the Start Menu**
- **Example: Accesses All Programs – Accessories menu to open Notepad**

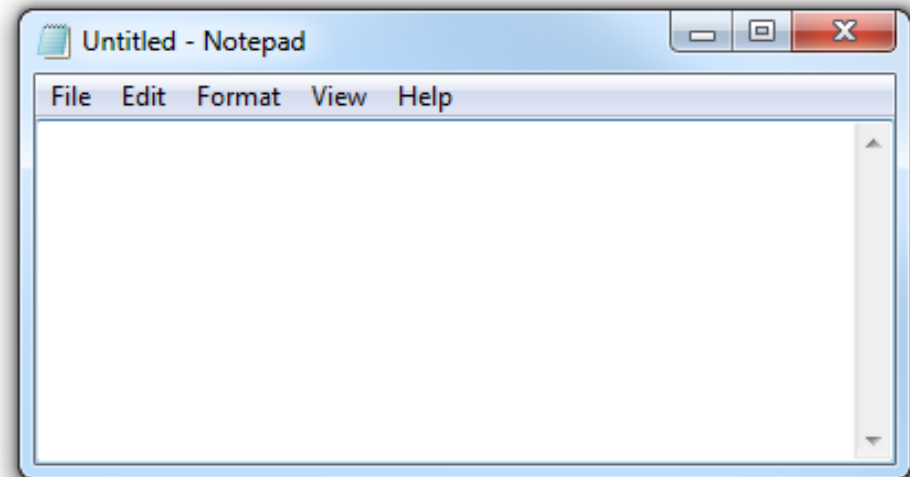


Figure 28: Notepad application
(note the buttons in the upper-right corner)

Taskbar and Start Menu (*continued*)



Figure 29: System tray showing several icons and the time



Figure 30: Quick Launch toolbar

Taskbar and Start Menu (continued)



Figure 31: Pinned applications

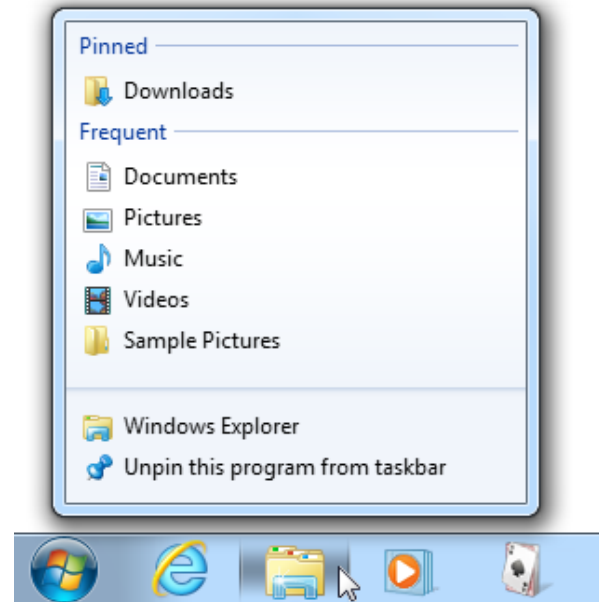


Figure 32: A Jump List

The Many Faces of Windows Explorer

- **My Computer**

- Provides access to drives, folders, and files
- Customizable: Can display different views, show hidden files, hide file extensions, and more

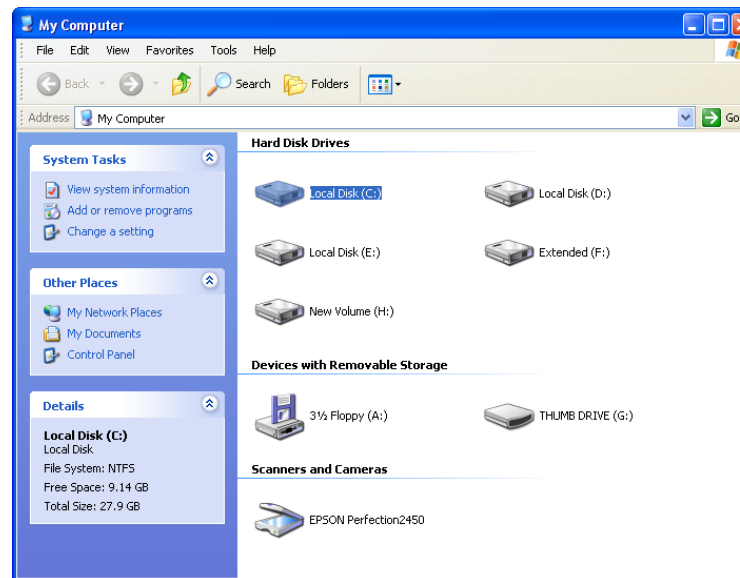


Figure 33: Windows Explorer in Windows XP displaying the drives installed, as well as common tasks on the left

The Many Faces of Windows Explorer (*continued*)

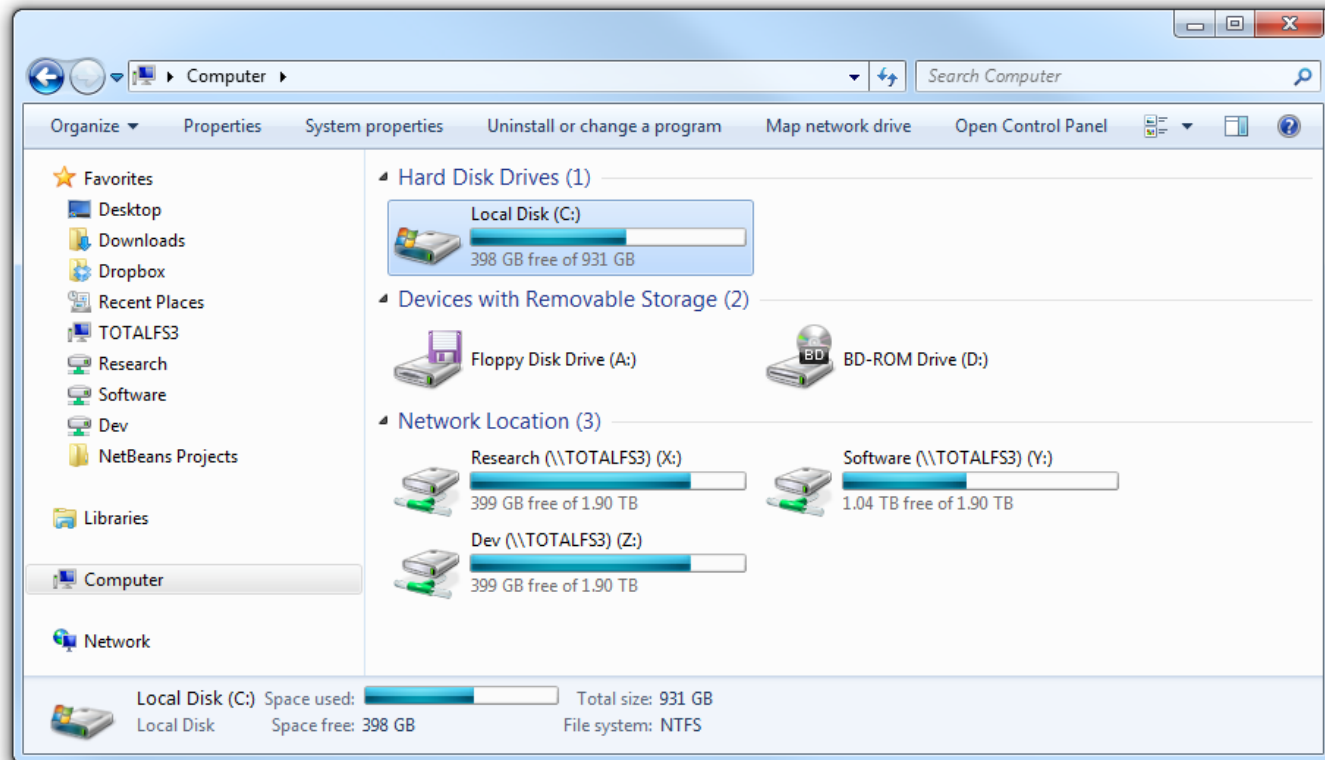


Figure 34: Windows Explorer in Windows 7 displaying the drives installed and showing tasks

Toggle Folder List (XP)

- **The Folder List view enables you to copy and move files easily between drives and folders**
- **In Windows Explorer, click the Folders button**
- **Now copy and move some files**
 - We do this all the time, but we don't think about what we're doing
 - When dragging files/folders, holding down the **CTRL** key copies the files/folders versus moving them

Toggle Folder List (XP) (continued)

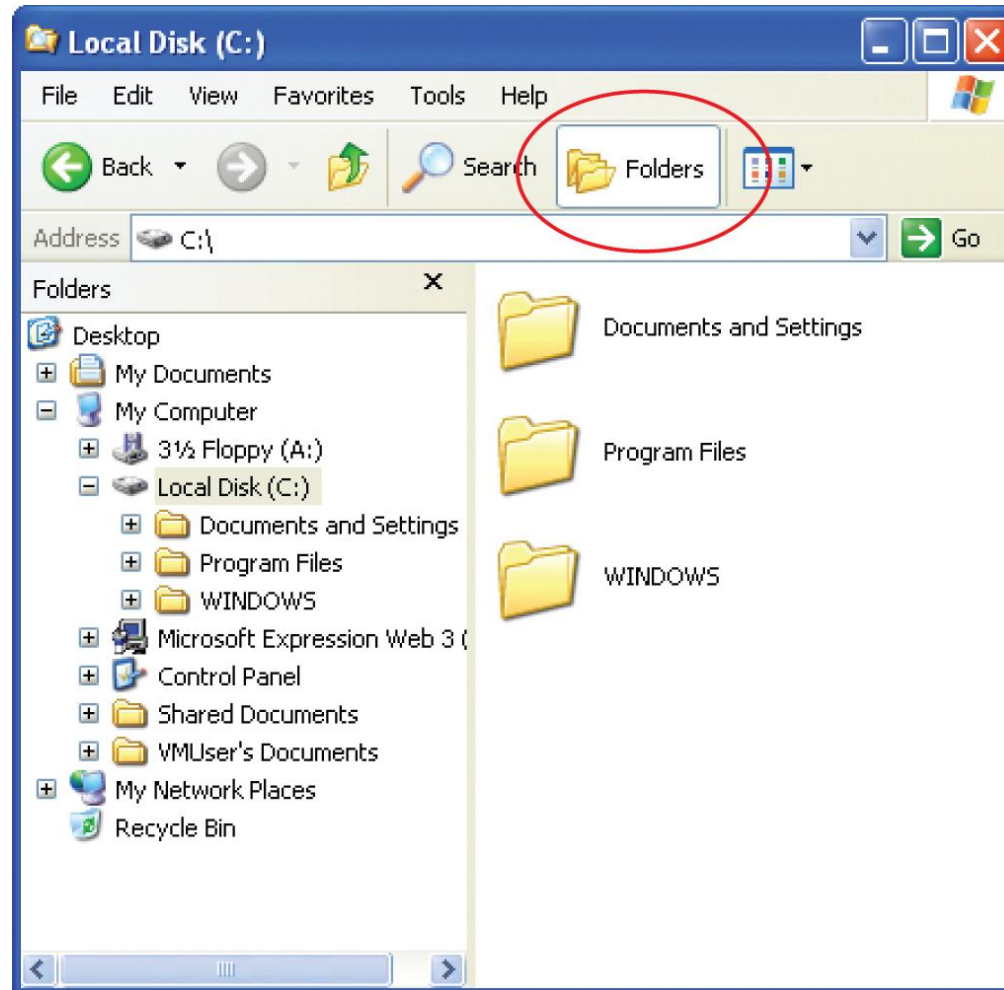


Figure 35: Windows Explorer in Windows XP with the Folders list toggled on

Changing Views

- **XP hides certain things by default**
 - Change Folder Options to see these things.
- **In My Documents, click Tools | Folder Options**
 - Select View tab
 - Select *Show hidden files and folders*
 - Deselect *Hide extensions for known file types*
 - Deselect *Hide protected operating system files*

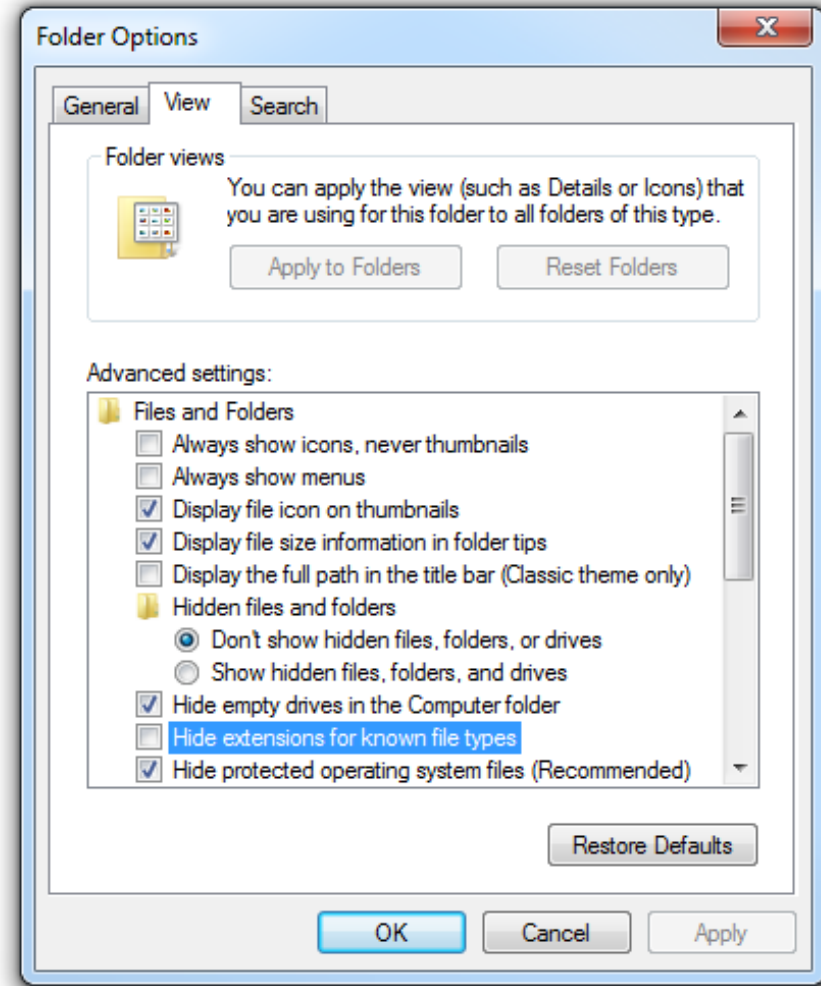


Figure 36: Folder Options dialog box

Changing Views

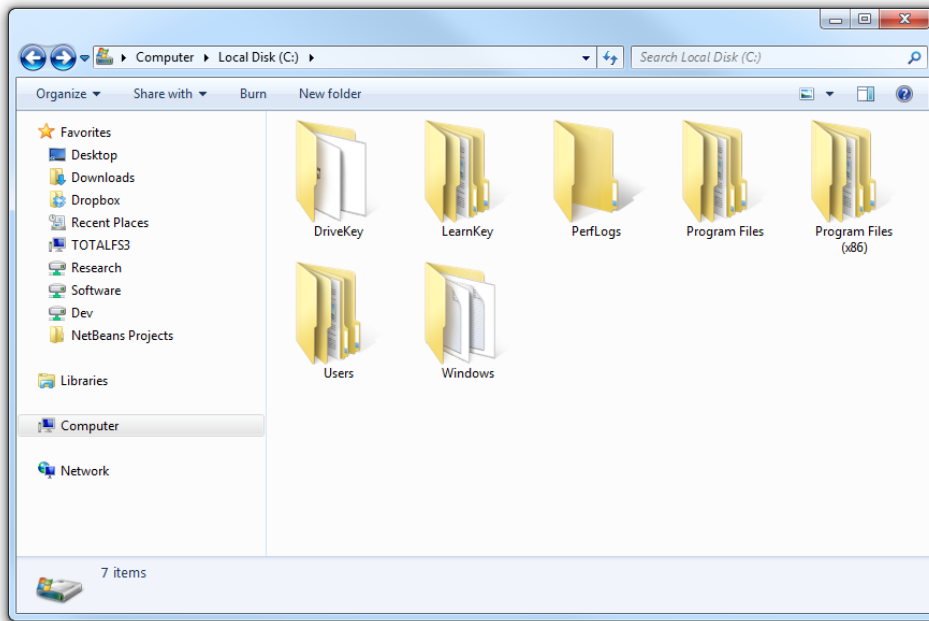


Figure 37: Default Computer view where many things are hidden

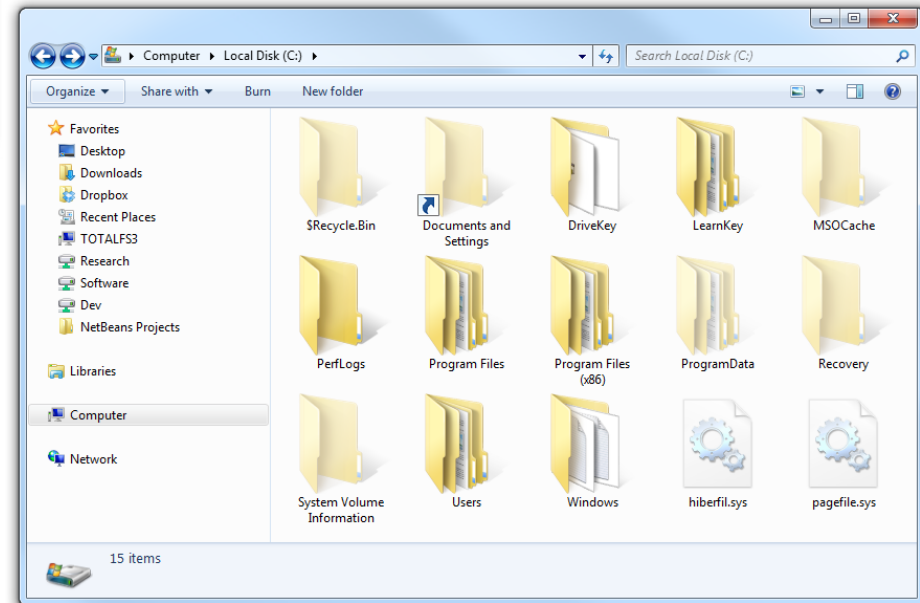


Figure 38: Computer displaying hidden files and folders

My Documents (Windows XP)

- **Windows XP**

- My Documents – Contains My Pictures, My Music, My Videos
- Not on Desktop by default
- Desktop items must be configured
- configured

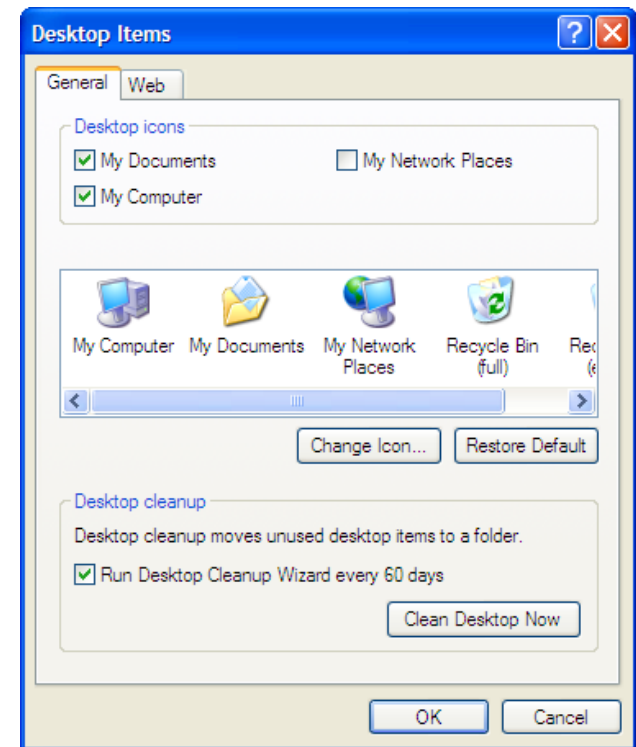


Figure 39: Windows XP Desktop Items dialog box

My Documents (Windows XP)

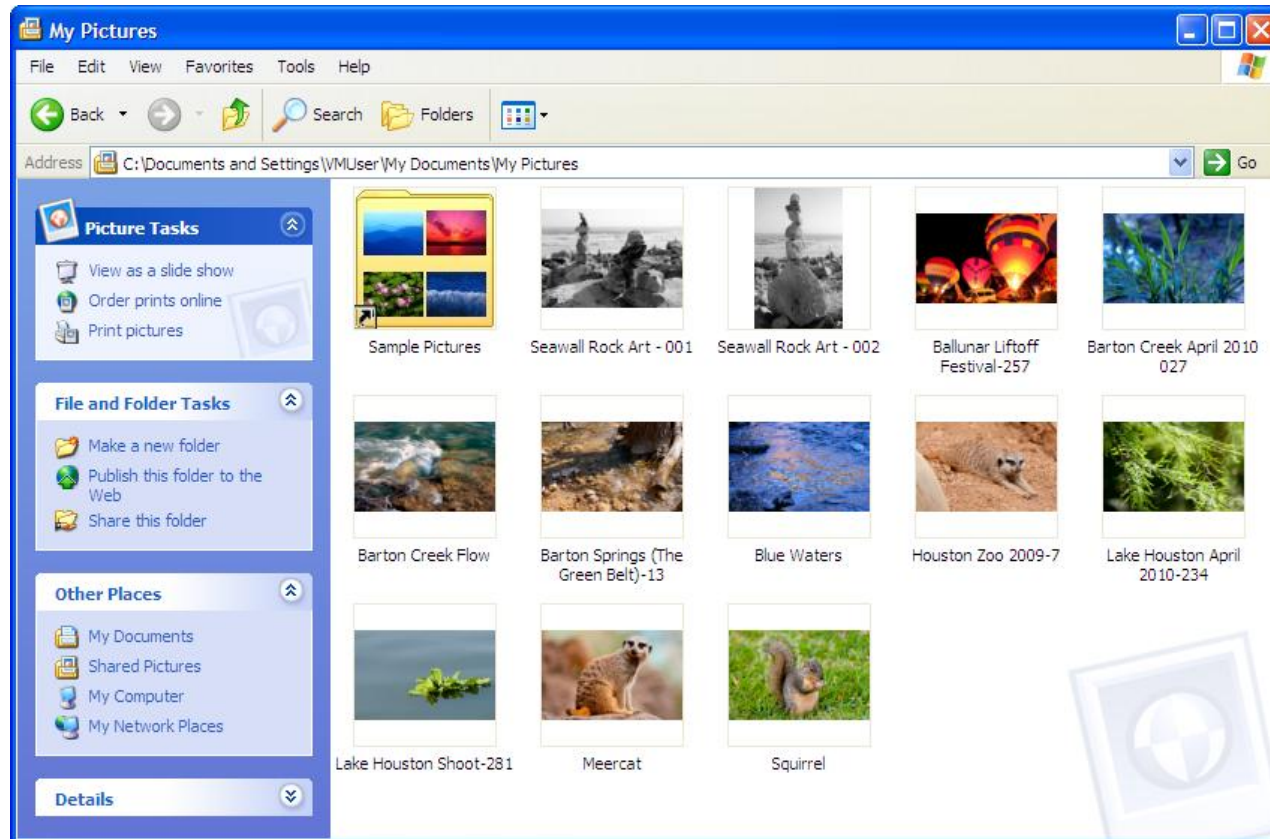


Figure 40: My Pictures subfolder in My Documents

User's Files (Windows Vista and 7)

- **Windows Vista/7**
 - Documents, Pictures, Music, Video
 - Additional ones include Links, Searches, etc.

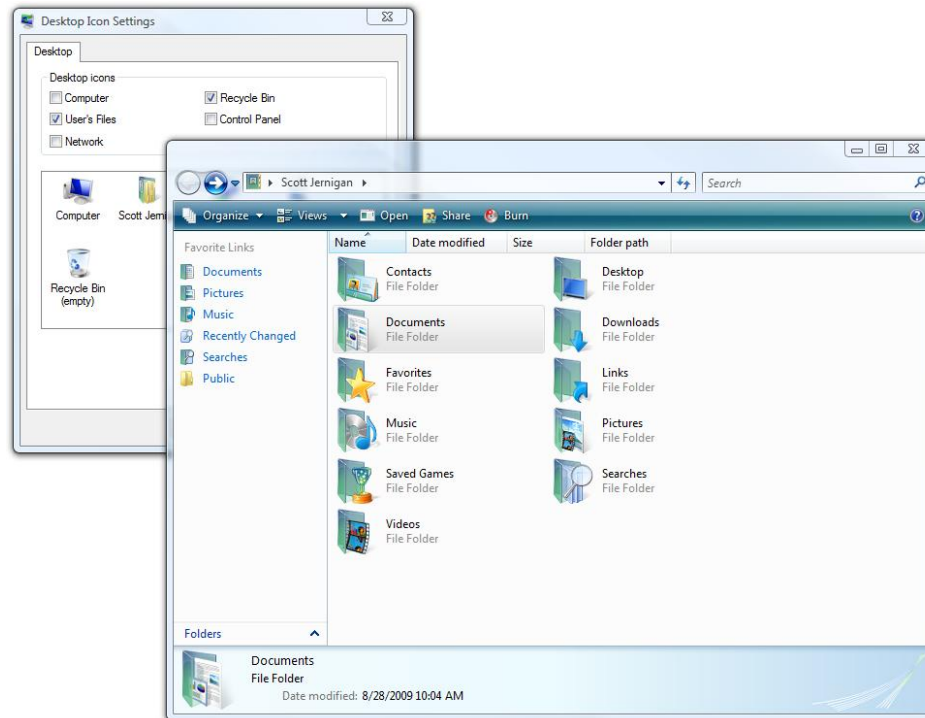


Figure 41: Typical user accounts folder in Windows Vista

Libraries (Windows 7)

- **Windows 7 Libraries**

- Aggregates **folders** from multiple locations
- Places them in a single, easy-to-find spot in Windows Explorer
- Files and folders don't actually move—the library just creates links to them

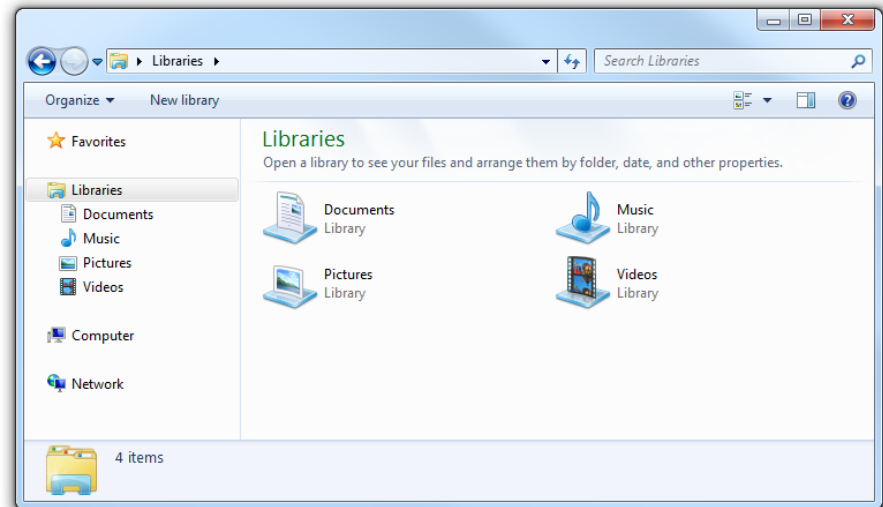
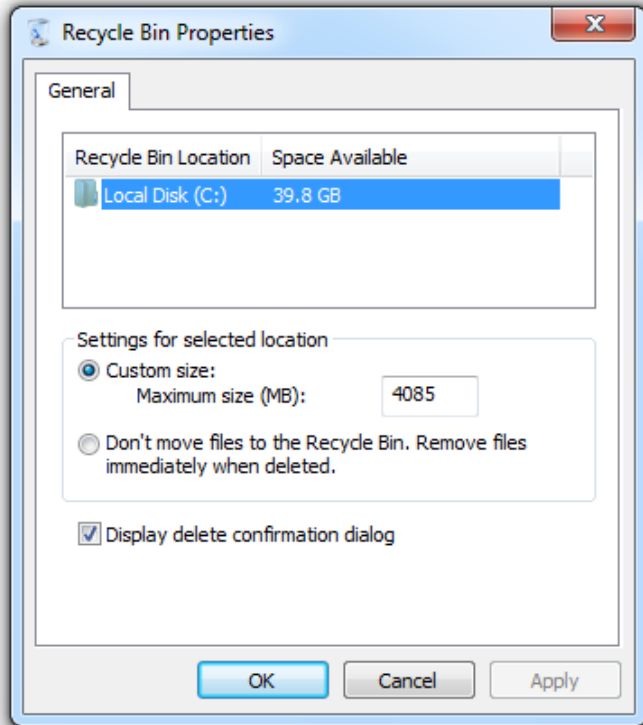


Figure 42: Libraries in Windows Explorer

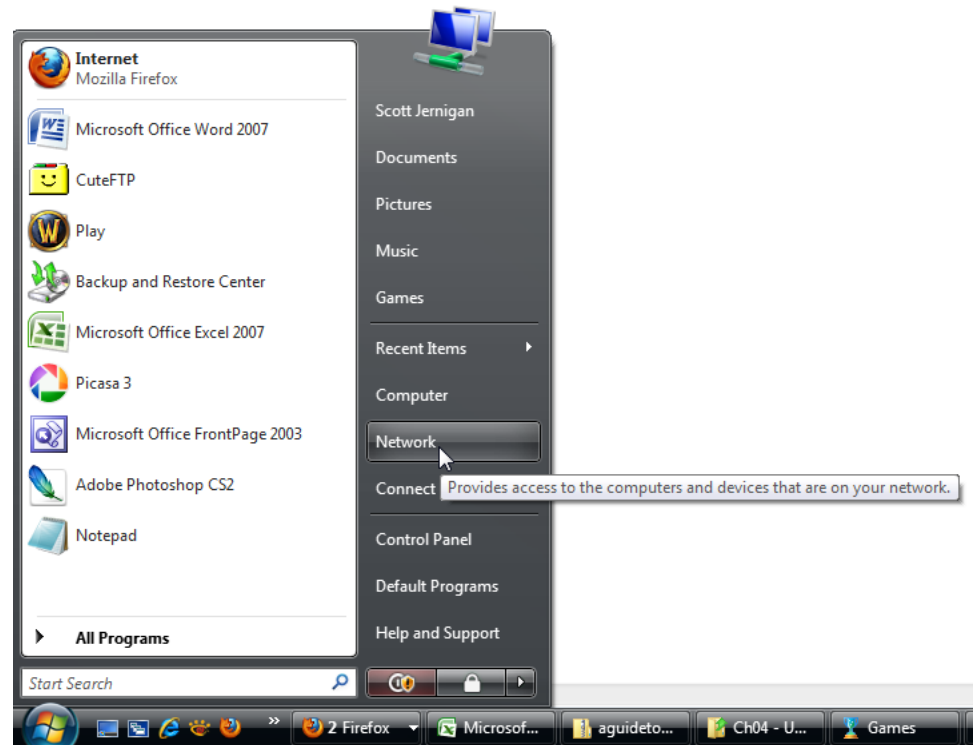
User Interface

- **Recycle Bin**
 - Deleted files sent to the Recycle Bin
 - Can retrieve them if desired
 - Size can be adjusted
- **My Network Places/Network**
 - Shows the current network connections available
- **Windows Sidebar (Vista)**
 - Enables small helper applications called Gadgets

User Interface (*continued*)



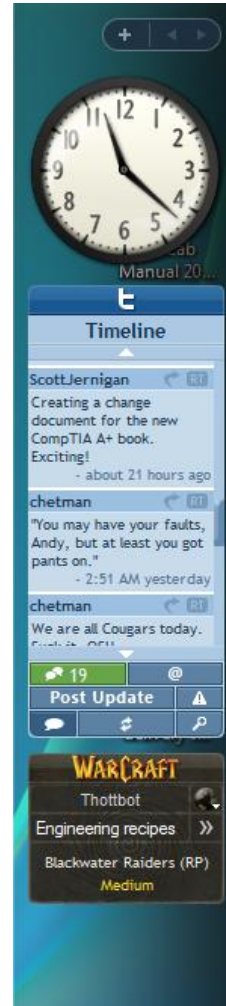
**Figure 43: Windows 7
Recycle Bin Properties**



**Figure 44: Network in
Windows Vista**

User Interface (*continued*)

**Figure 45: Windows Sidebar
in action**



Hot Keys

Function Keys

Key	Function
F1	Help
F2	Rename
F3	Search menu
F5	Refresh the current window
F6	Move among selections in current windows

Hot Keys (*continued*)

Popular hot keys

Key Combination	Function
CTRL-ESC	Open Start menu
ALT-TAB	Switch between open programs
ALT-F4	Quit program
CTRL-Z	Undo the last command
CTRL-A	Select all the items in the current window
SHIFT-DELETE	Delete item permanently
SHIFT-F10	Open a shortcut menu for the selected item
SHIFT	Bypass the automatic-run feature for optical media

Hot Keys (*continued*)

Popular hot keys (continued)

Key Combination	Function
ALT-SPACE	Display the main window's System menu (from this menu you can restore, move, resize, minimize, maximize, or close the window)
ALT-ENTER	Open the properties for the selected object

Hot Keys (*continued*)

Working with text

Key Combination	Function
CTRL-C	Copy
CTRL-X	Cut
CTRL-V	Paste
CTRL-Z	Undo

Hot Keys (*continued*)

Windows Key shortcuts

Key Combination	Function
WINDOWS KEY	Start menu
WINDOWS KEY-D	Show desktop
WINDOWS KEY-E	Windows Explorer
WINDOWS KEY-L	Lock the computer
WINDOWS KEY-TAB	Cycle through taskbar buttons (or Flip 3D with Windows Aero in Vista/7)
WINDOWS KEY-PAUSE/BREAK	Open the System Properties dialog box

Operating System Folders

- **Techs need to know where to find the important OS folders and files . . .**
- **And what to do when they get there!**
 - System folder
 - Other folders, such as Program Files, Documents and Settings, and **C:\WINDOWS**

Operating System Folders (*continued*)

- **System folder**
 - Folder where the OS files are installed
 - Called "SystemRoot" or referred to as *%systemroot%* in commands and scripts
 - Typically **C:\Windows** in all XP, Vista, and 7 versions

Operating System Folders (*continued*)

- C:\%systemroot%\Fonts
 - All fonts reside here
- C:\%systemroot%\Offline Files (Offline Web Pages in Windows 7)
 - Web pages saved for offline viewing
- C:\%systemroot%\SYSTEM32
 - Critical OS files
- C:\%systemroot%\Temp
 - Windows and apps create temp files here

Program Folders

- C:\Program Files (All Versions)
 - For installed applications
- C:\Program Files (x86)
 - Only seen in 64-bit Windows
 - Where 32-bit apps are placed
 - 64-bit apps are placed in C:\Program Files

Personal File Locations (XP)

- C:\Documents and Settings (XP)
 - All user personal files and settings
- C:\Documents and Settings\Default User (hidden)
 - All of the default settings for a user
- C:\Documents and Settings\All Users
 - This folder stores information for any setting or application that's defined for all users on the PC

Personal File Locations (XP) (*continued*)

- C:\Documents and Settings\Shared Documents (XP only)
 - A set of folders accessible by every account on a computer
 - When using Windows XP's Simple File Sharing, this is the only folder on the computer that's shared
- C:\Documents and Settings\
 - The location of a specific user account's My Documents folder

Personal File Locations (XP) (continued)

- C:\Documents and Settings\\Desktop
 - The location of the desktop folder for a specific user account
- C:\Documents and Settings\\<User name>\Documents
 - The location of the My Documents folder for a user account other than the one currently logged into the computer
- C:\Documents and Settings\\Application Data (hidden)
 - A hidden folder that stores data used by various programs
- C:\Documents and Settings\\Start Menu

Personal File Locations (XP) (continued)

- C:\Documents and Settings\\Start Menu
 - The Start menu customized settings and shortcuts.

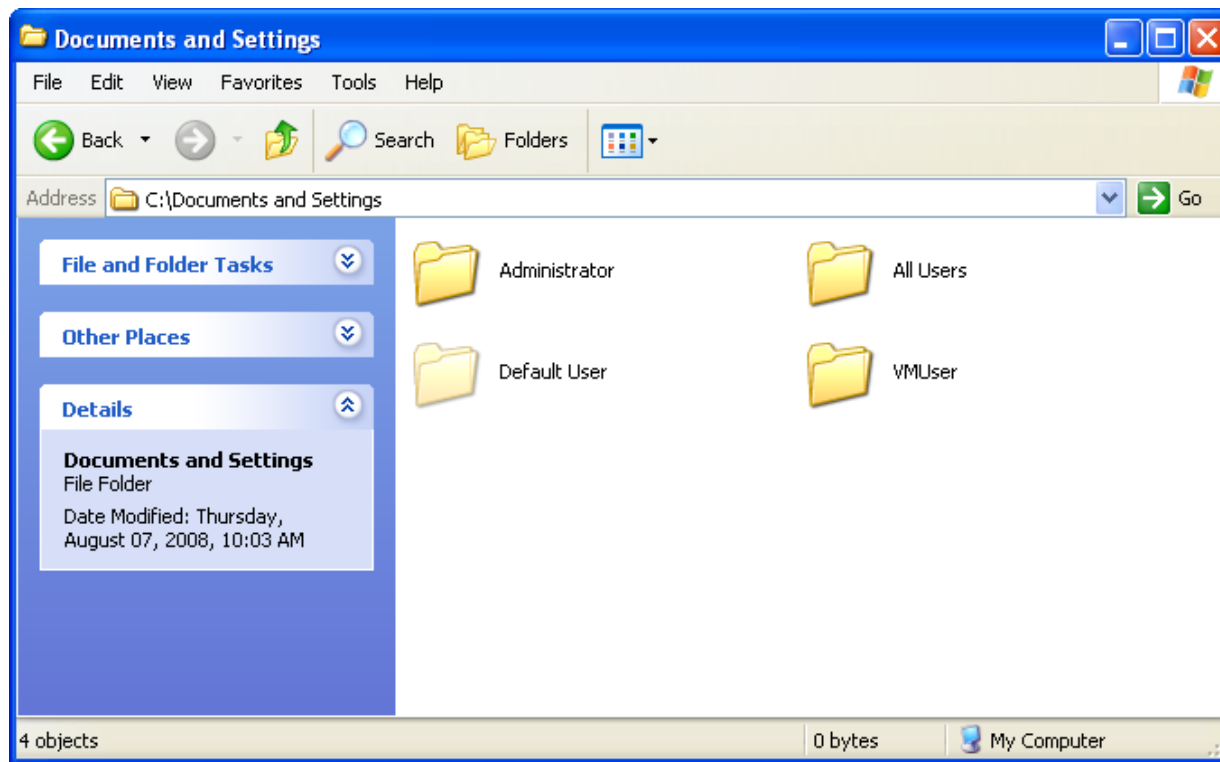


Figure 46: Contents of a typical \Documents and Settings folder in Windows XP

Personal File Locations (Vista/7)

- \Users\Default (hidden), \Users\All Users, and \Users\
 - All of these folders retain the same functions as in Windows XP
- \Users\
 - This folder still stores all settings defined for a particular user
- \Users\\Desktop
 - Same as in Windows XP

Personal File Locations (Vista/7) (continued)

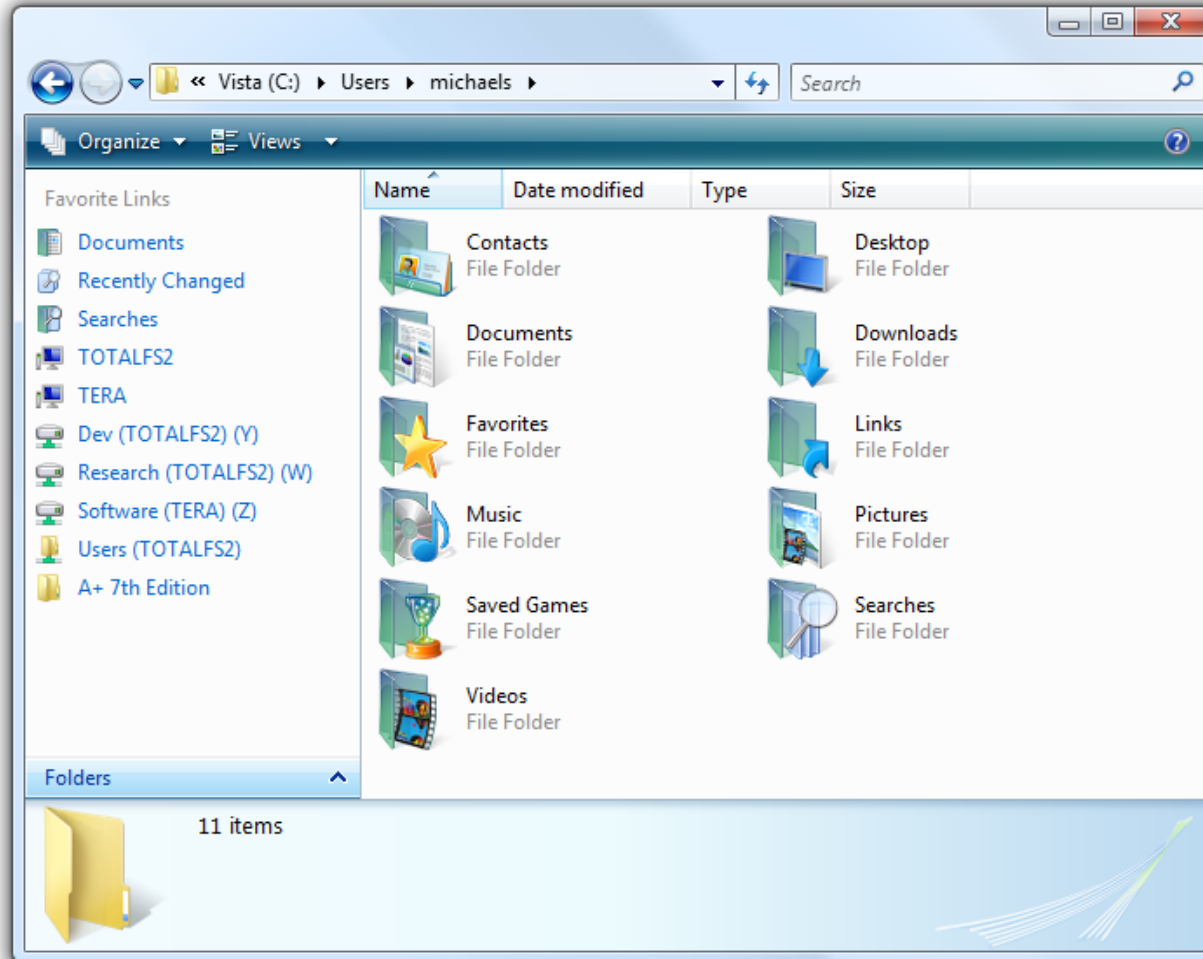


Figure 47: Contents of a typical \Users\\ folder in Vista

Personal File Locations (Vista/7) (*continued*)

- \Users\\Documents
 - This is the Documents folder for that user. Note that in Vista, it's simply known as "Documents," while in Windows 7, it is once again "My Documents."
- \Users\\Downloads
 - Microsoft's preferred download folder for applications to use
- \Users\\Start Menu
 - Same as in Windows XP

Tech Utilities

- **Where to find the right tools for the job**
 1. Right-click
 2. Control Panel
 3. Device Manager
 4. System Tools
 5. Command line
 6. Microsoft Management Console
 7. Administrative Tools

Right-Click

- **Brings up a menu of options for that object**
- **Also called:**
 - Alt menu
 - Context menu
- **Works almost everywhere**
- **Properties selection very common**

Right-Click (*continued*)

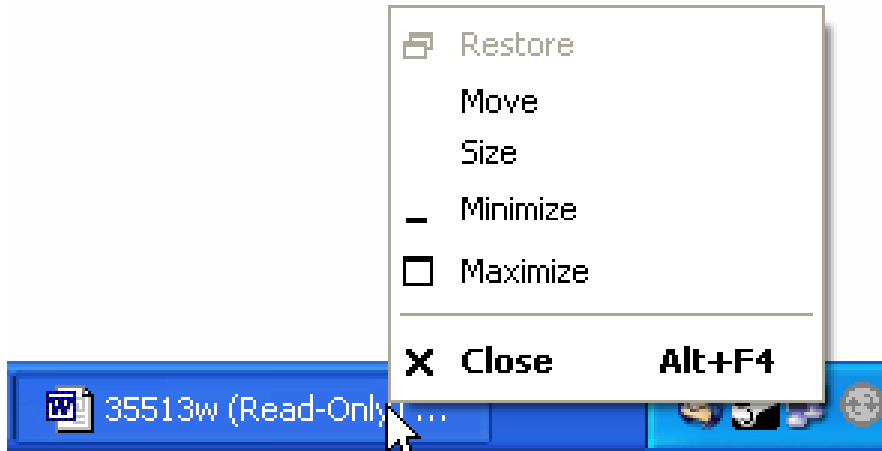


Figure 48: Right-clicking on a running program in Windows XP

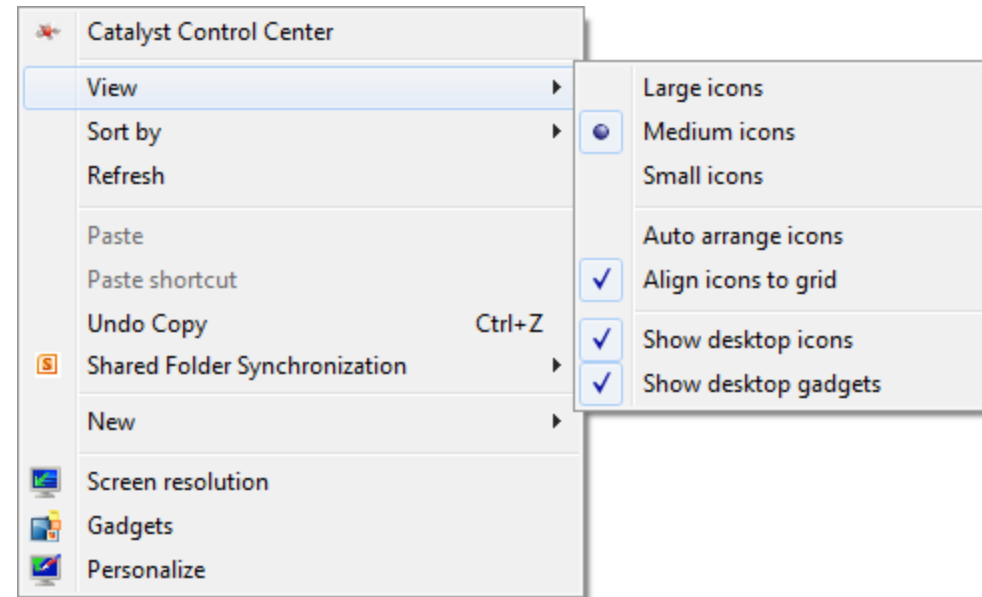


Figure 49: Right-clicking on the desktop in Windows 7 offers numerous settings

Right-Click (*continued*)

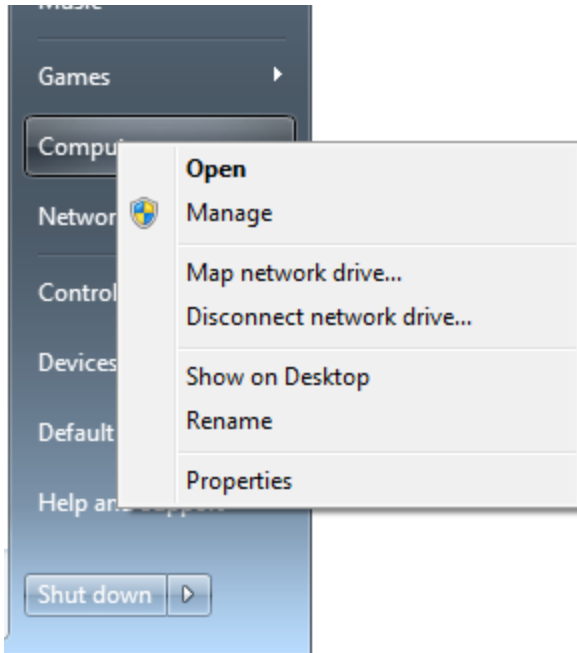


Figure 50: Right-clicking on Computer

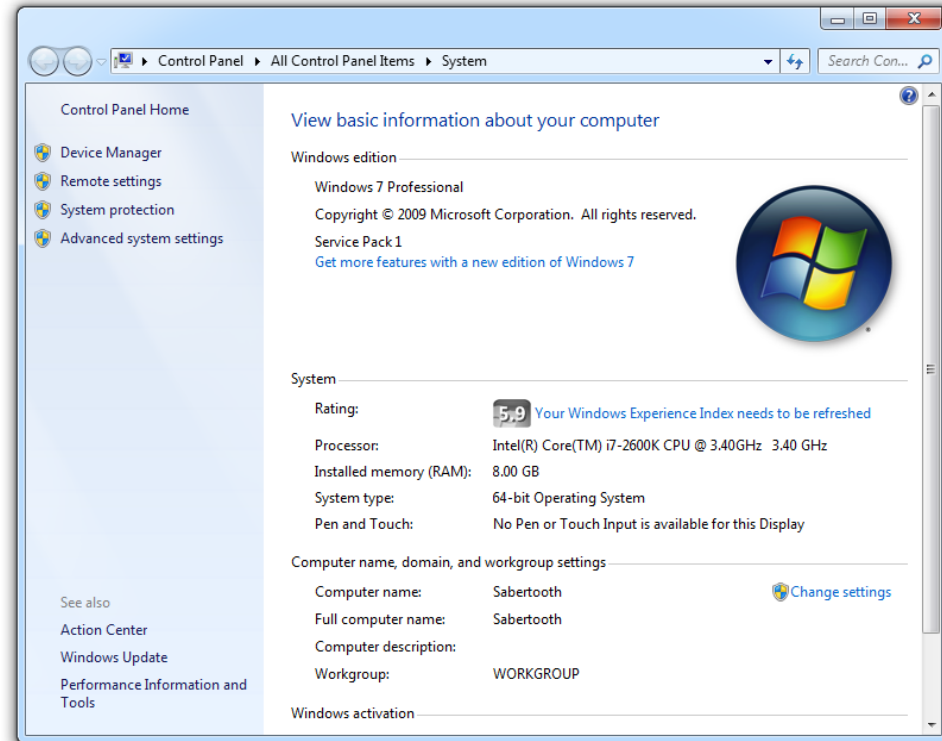


Figure 51: Computer properties

Control Panel

- **Handles maintenance, upgrade, and configuration aspects for Windows**
 - Start | Settings | Control Panel
 - Contains many mini-programs, called applets
 - Any icon in the Control Panel is a file with a CPL extension
 - Opens in Category View by default

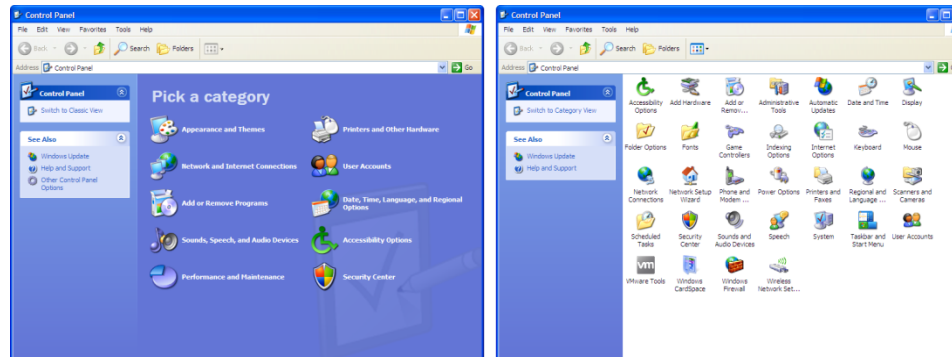


Figure 52: Windows XP Control Panel in two views: Category (left) and Classic (right)

Control Panel (*continued*)



Figure 53: Add Hardware Wizard of the Add Hardware applet

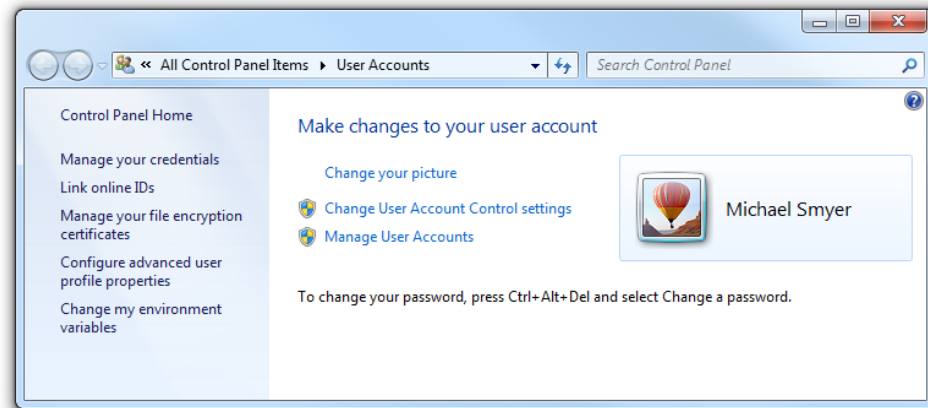



Figure 54: User Accounts window of the User Accounts applet

Device Manager

- **Used to configure hardware and drivers**
- **Access through**
 - System applet in Control Panel
 - Properties of My Computer, Hardware (XP)
 - Properties of Computer, Device Manager (Vista/7)
 - -Break, Hardware
 - Computer Management
 - Start | Run, type devmgmt.msc, click OK

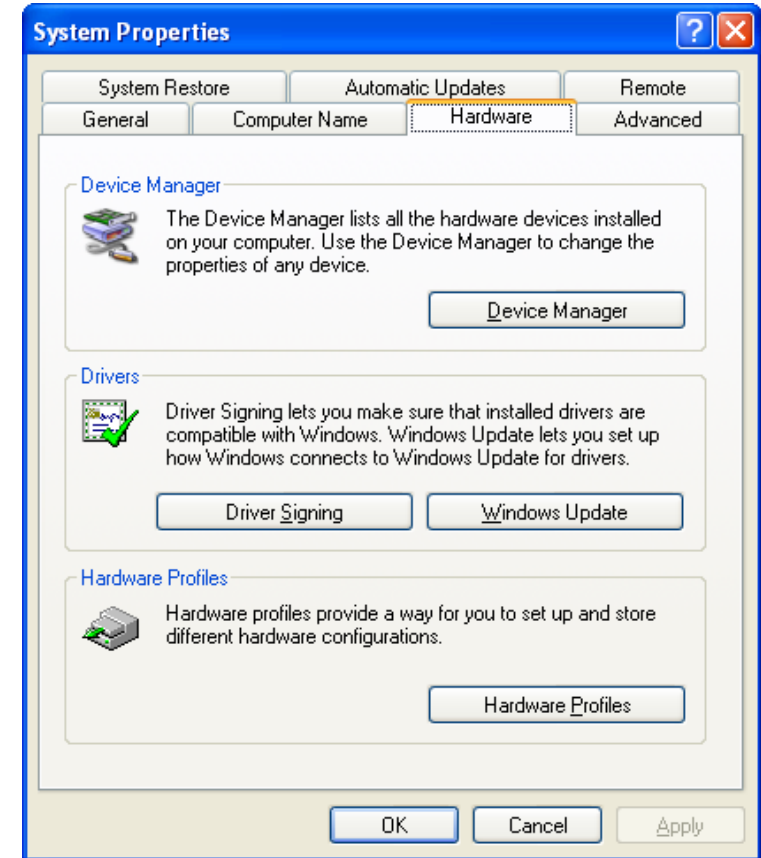


Figure 55: Windows XP System applet with the Hardware tab selected

Device Manager (*continued*)

- **Devices are organized in special groups called types.**
- **Problems identified with red "X" or a black exclamation point on a yellow background.**
- **Windows Vista/7 uses a down-arrow icon to display a manually disabled device.**
- **Can also update drivers here.**
- **First place to check for hardware issues.**

Device Manager (continued)

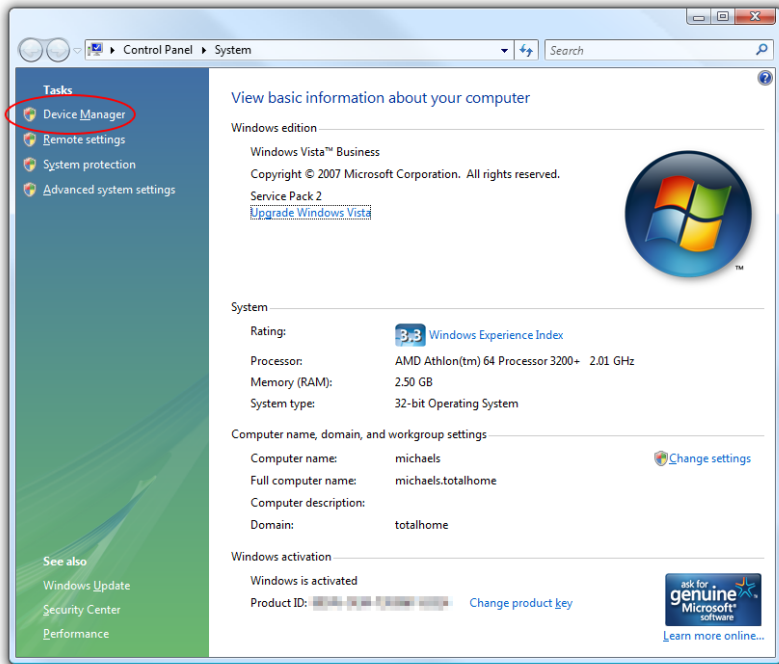


Figure 56: Windows Vista System applet with the Device Manager menu option circled

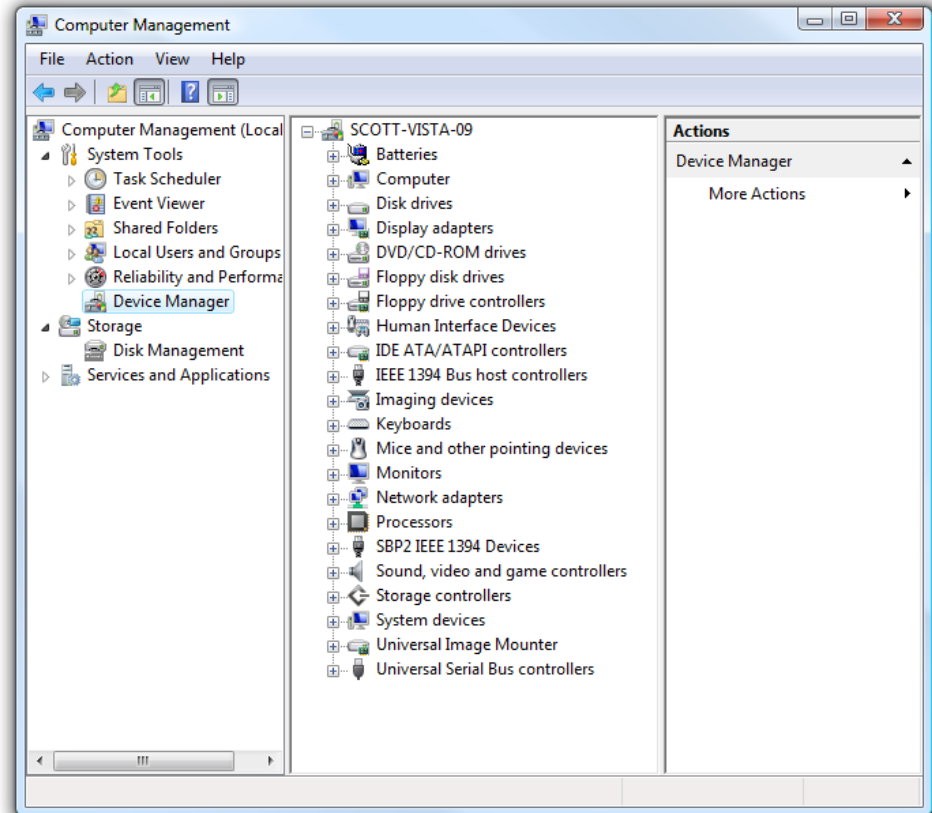


Figure 57: Device Manager in Computer Management

Device Manager (*continued*)

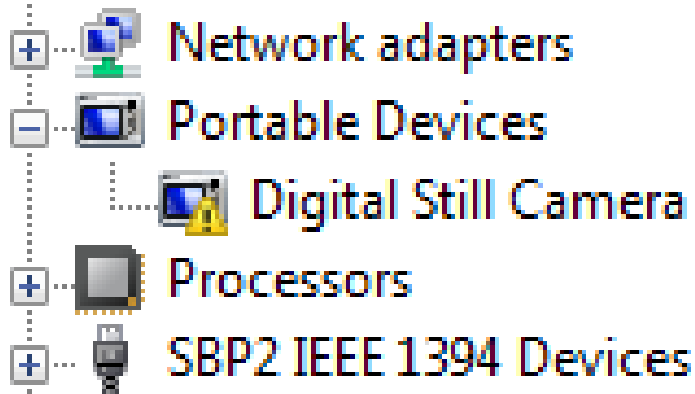


Figure 58: Problem device

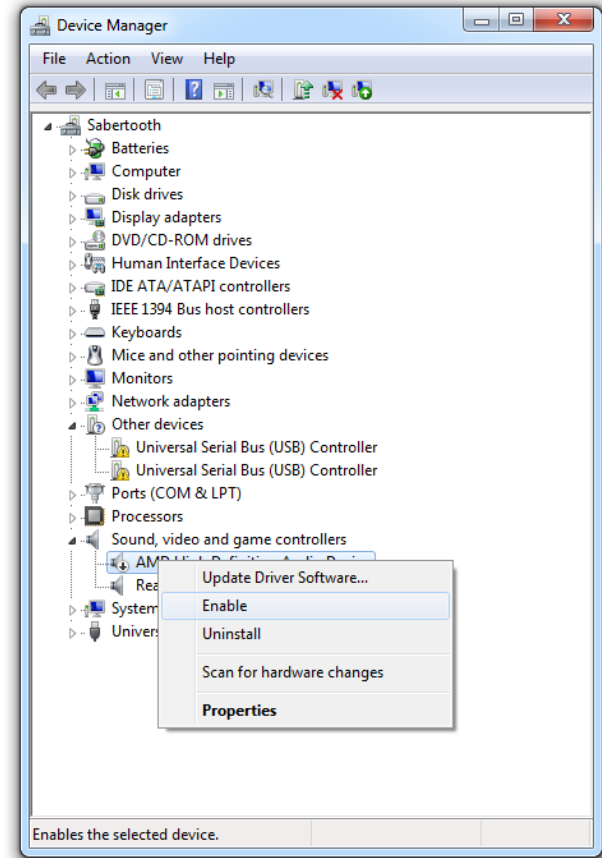


Figure 59: Enabling a disabled device

Device Manager (*continued*)

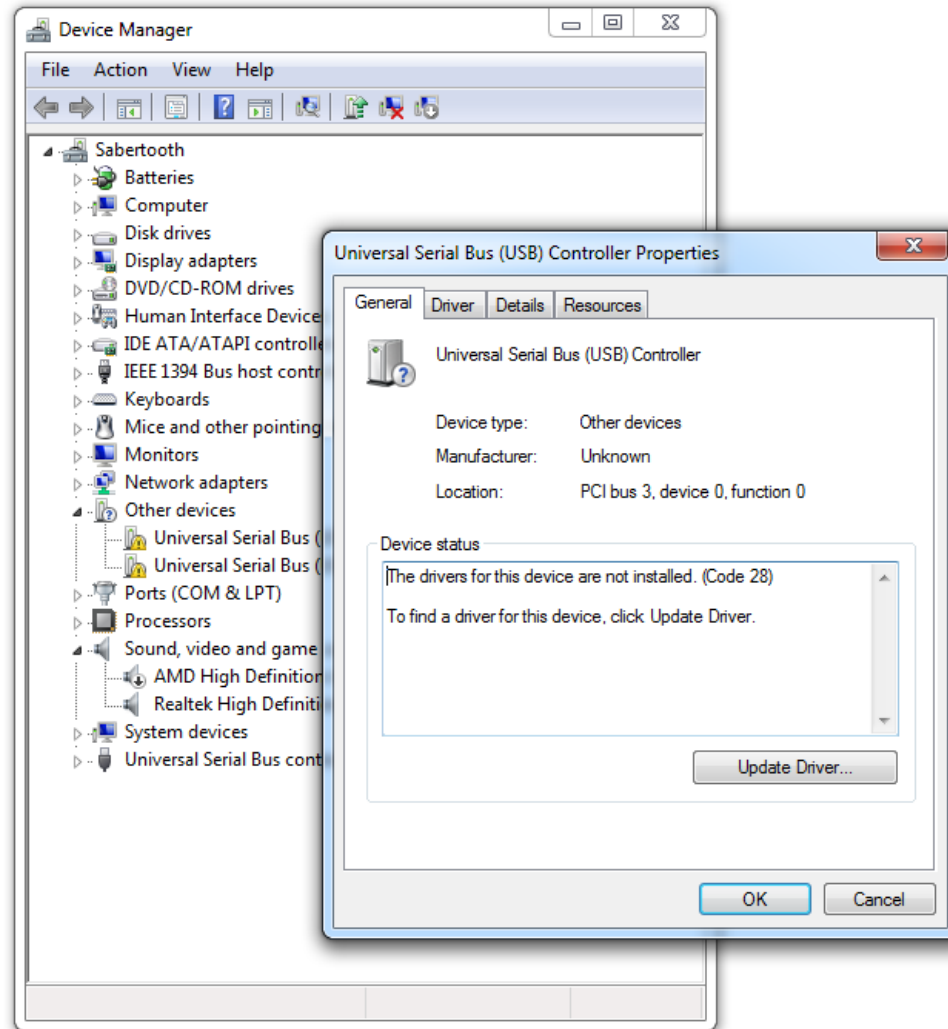


Figure 60: Problem device properties

Device Manager (*continued*)

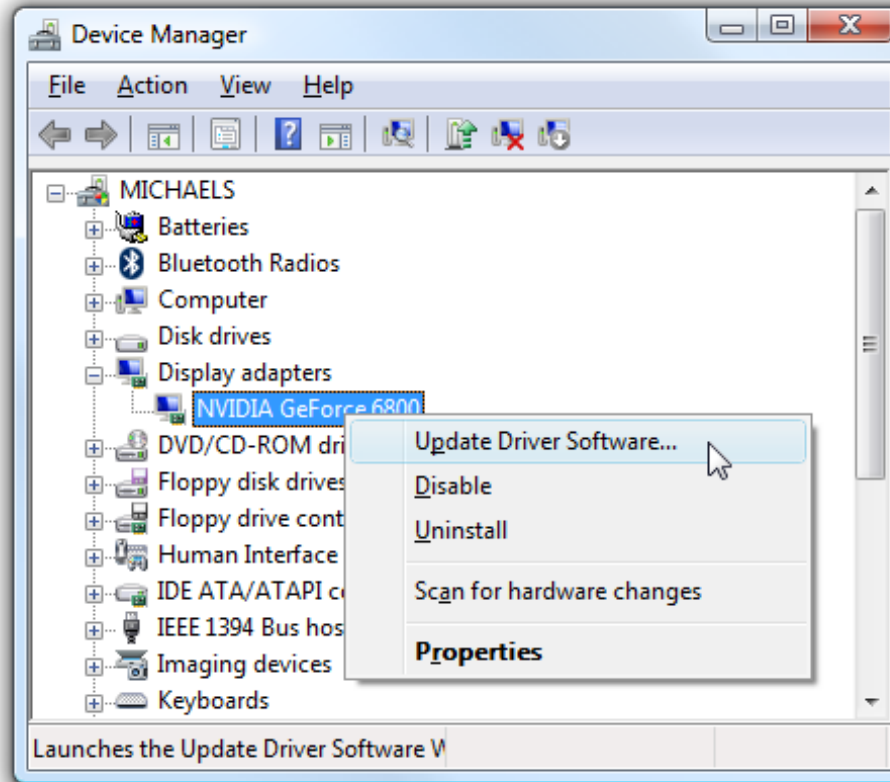


Figure 61: Selecting Update Driver Software in Windows Vista Device Manager

System Tools

- **A collection of tech utilities found on the Start menu**
 - Start | All Programs | Accessories | System Tools

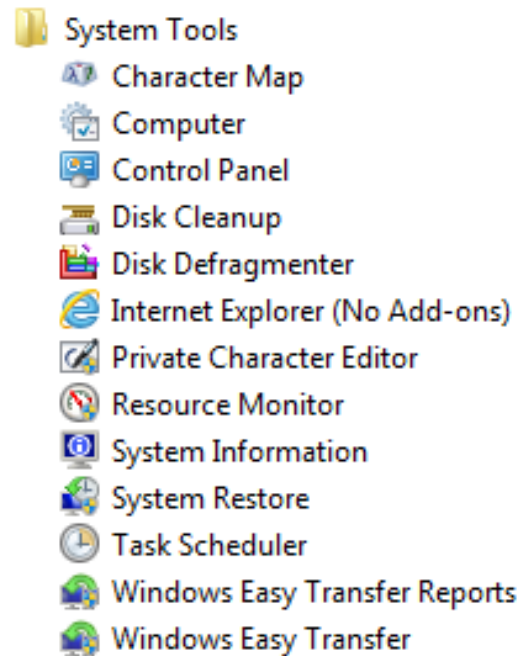


Figure 62: System Tools menu options

Backup (XP) and Backup Status and Configuration (Vista)

- **Built-in backup utility**
 - Enables you to back up selected files and folders to removable media such as tape drives
- **Vista will only back up personal data with the Backup Status and Configuration Tool**
 - Only allows you to back up to optical media, a hard drive, or a networked drive

Character Map (All)

- **Enables use of characters that an application may not support**
 - Enables you to copy any Unicode character into the Clipboard

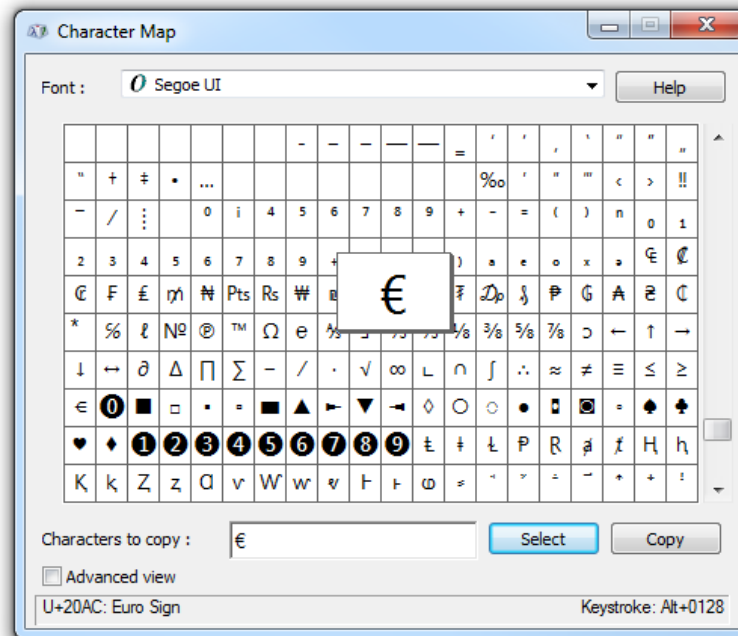


Figure 64: Character Map

Disk Tools

- **Disk Cleanup (All)**
 - Deletes temporary files
- **Disk Defragmenter (All)**
 - Used to defragment drives

File Settings and Transfer Tools

- **Files and Settings Transfer Wizard (XP only)**
 - Transfers user settings to a new PC
- **Windows Easy Transfer (Vista/7)**
 - Functions similarly to the Files and Settings Transfer Wizard

File Settings and Transfer Tools (*continued*)



Figure 65: Files and Settings Transfer Wizard

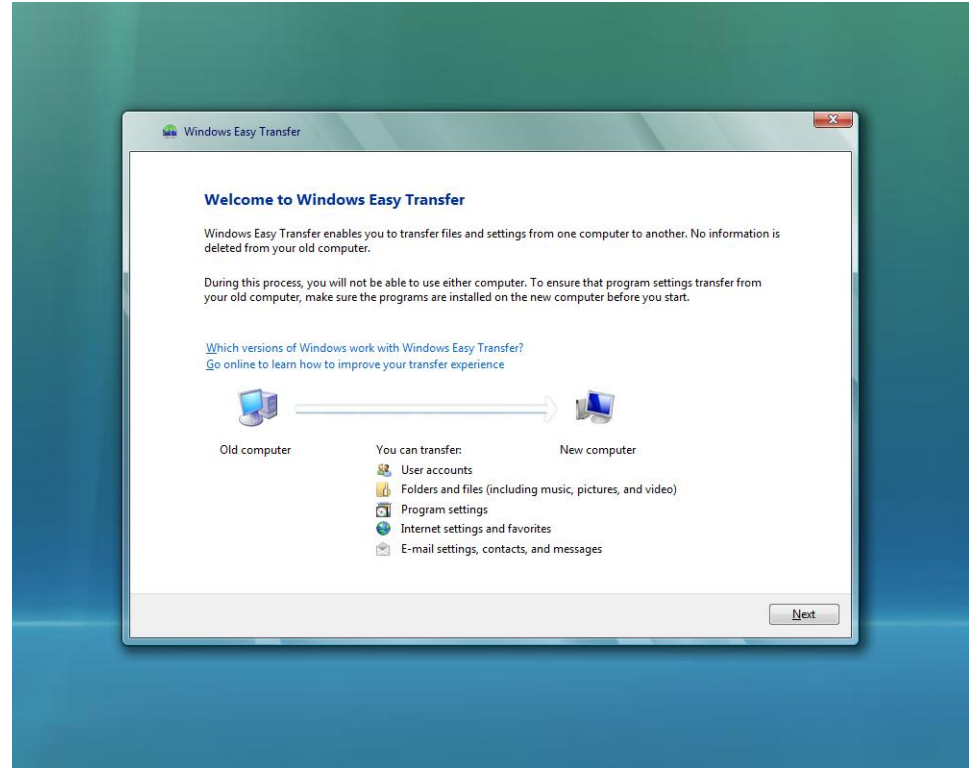


Figure 66: Windows Easy Transfer

Scheduled Tasks (All)

- **Scheduled Tasks**
 - Schedule any program to start and stop any time

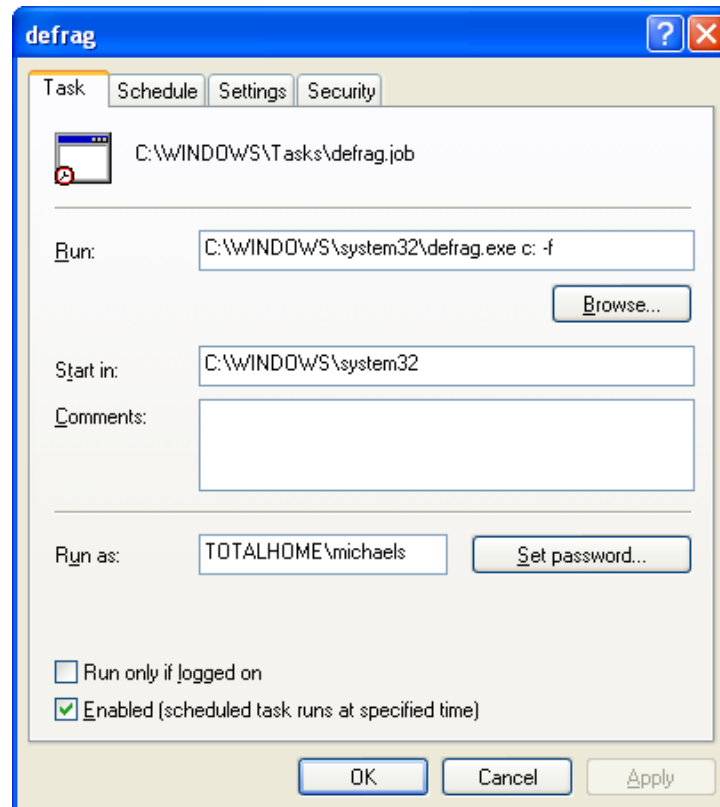


Figure 67: Task Scheduler

Security Center (Windows XP)

- **One-stop location for configuring many security features on your computer**
 - Located in Control Panel
- **Windows Vista and Windows 7 remove Security Center from System Tools**
 - Windows Vista retains the Control Panel applet
 - Windows 7 has a beefed-up applet called the Action Center

System Information and Restore (All)

- **System Information**

- shows tons of information about the hardware and software on your PC

- **System Restore**

- enables you to take a "snapshot"—a copy of a number of critical files and settings—and return to that state later

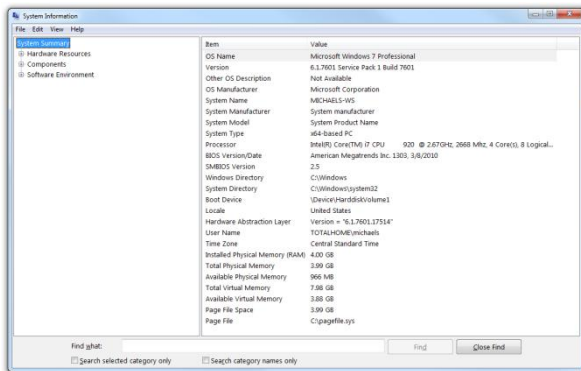


Figure 68: System Information

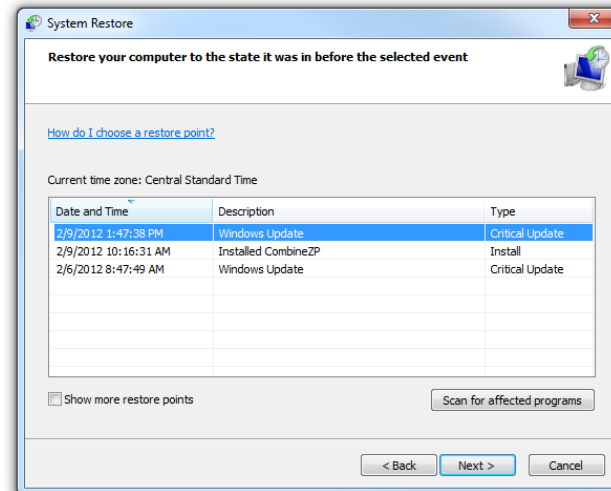


Figure 69: System Restore

Resource Monitor (Windows 7)

- **Tracks CPU, memory, disk, and network usage on your computer**
- **Displays that information in charts and graphs**
- **Can help you track down performance or system resource issues**

Command-Line Interface (CLI)

- **Start | Run | cmd**
- **Not DOS**
- **DOS is dead, but CLI thrives in all versions of Windows**

```
C:\>ver  
MS-DOS Version 6.00  
  
C:\>_
```

Figure 70: DOS command prompt

```
Administrator: C:\Windows\system32\cmd.exe  
05/22/2009 03:52 PM <DIR> Graphics  
09/24/2007 11:30 AM <DIR> install  
04/22/2008 12:06 PM <DIR> logs  
05/22/2009 03:52 PM 551,408 mss32_s.dll  
05/22/2009 03:52 PM <DIR> Public  
05/22/2009 03:52 PM <DIR> resource  
10/10/2007 12:07 PM <DIR> servers  
07/03/2007 04:27 PM <DIR> skins  
07/03/2007 04:31 PM <DIR> steam  
05/22/2009 03:52 PM 2,880,760 Steam.dll  
05/22/2009 03:46 PM 1,217,784 Steam.exe  
09/15/2005 03:20 PM 318 steam.ico  
05/22/2009 04:58 PM 796,916 Steam.log  
05/13/2009 12:15 PM <DIR> steamapps  
05/22/2009 03:52 PM 3,004,912 steamclient.dll  
05/22/2009 03:52 PM 2,987,256 SteamUI.dll  
05/22/2009 03:52 PM 60,312 SteamUI_938.mst  
05/22/2009 03:46 PM 14 Steam_53.mst  
09/13/2005 05:49 PM 9,653 steam_install_agreement.rtf  
03/29/2007 03:29 PM 121 Support.url  
05/22/2009 03:52 PM 77,824 ThirdPartyLegalNotices.doc  
05/22/2009 03:52 PM 268,784 tier0_s.dll  
11/14/2008 05:39 PM <DIR> userdata  
05/22/2009 03:52 PM 371,184 vstdlib_s.dll  
05/22/2009 03:52 PM 256,496 WriteMiniDump.exe  
23 File(s) 16,165,307 bytes  
16 Dir(s) 47,442,325,504 bytes free  
C:\Program Files\Steam>_
```

Figure 71: Command prompt in Windows Vista

Microsoft Management Console (MMC)

- **Shell program - holds utilities called snap-ins**
- **Start | Run | mmc**
- **Starts with blank console**
- **Add snap-ins: File | Add/Remove Snap-ins | Add**
- **Save the new customized console you created**

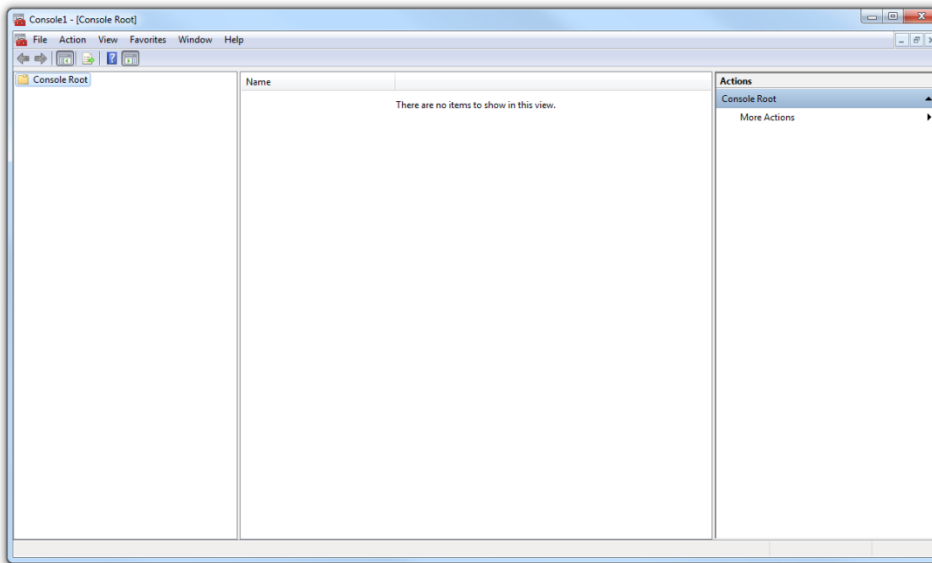


Figure 72: Blank MMC

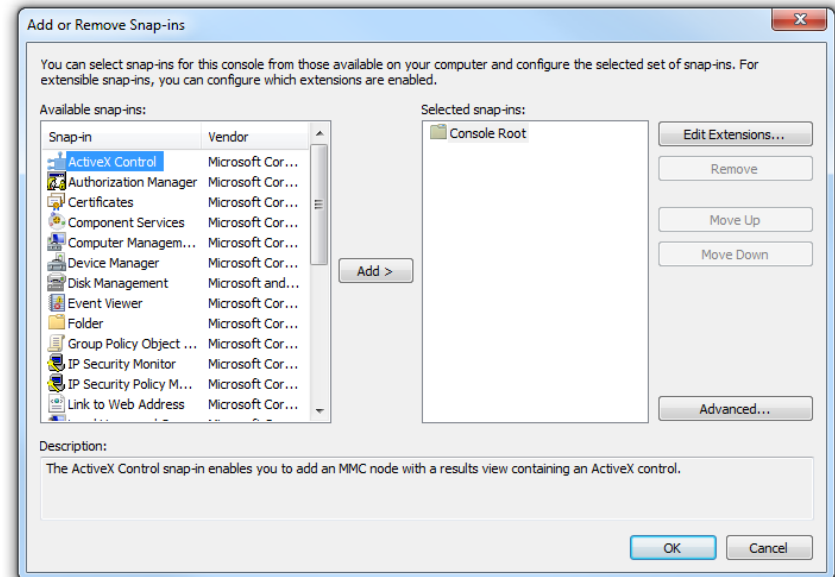


Figure 73: Available snap-ins

Microsoft Management Console (MMC) (*continued*)

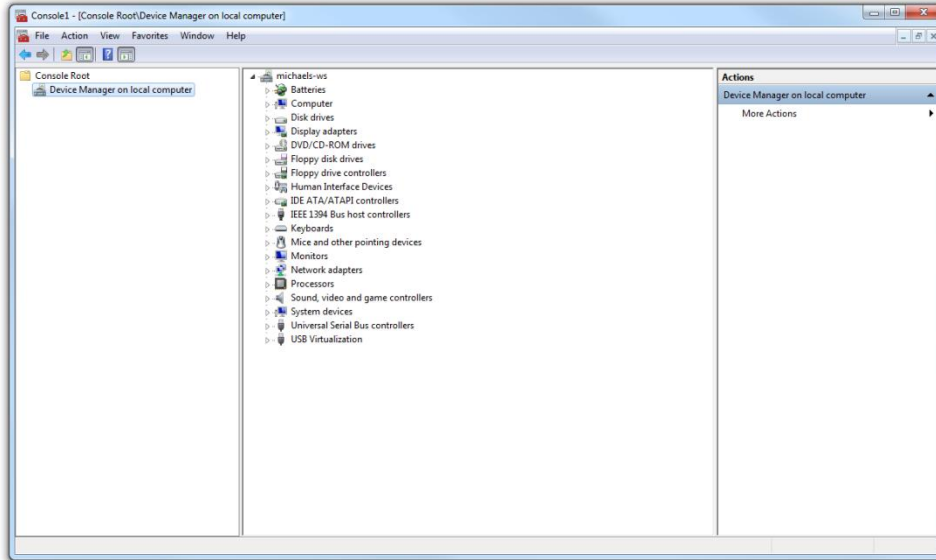


Figure 74: Device Manager as a snap-in



Figure 75: The Device Manager shortcut on the desktop

Tech Utilities: Administrative Tools

- **Administrative Tools**

- A folder that holds many predefined MMC consoles built by Microsoft
- Control Panel | Administrative Tools
- The three most-used administrative tools:
 - Computer Management
 - Event Viewer
 - Performance or Reliability and Performance Monitor

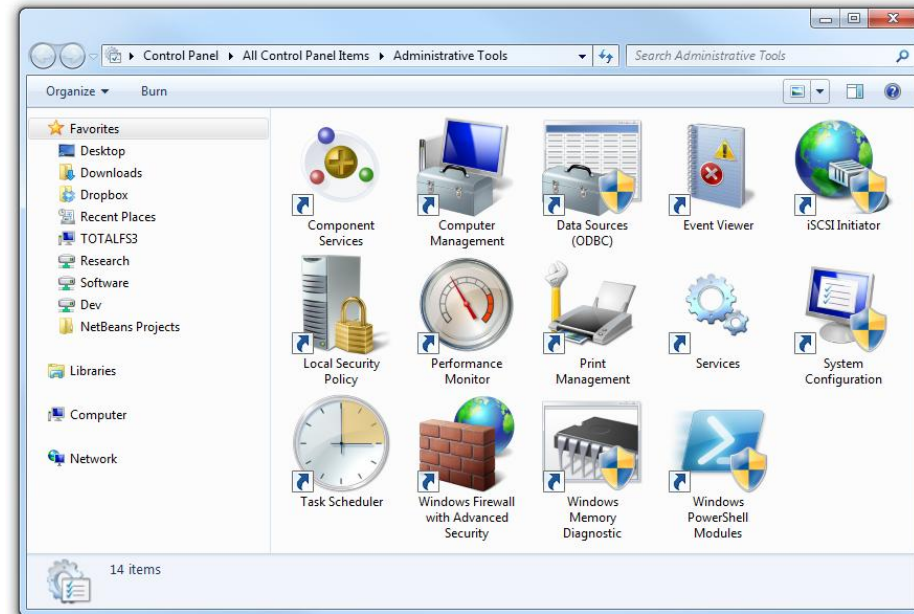


Figure 76: Administrative Tools

Computer Management

- A predefined MMC that pulls together snap-ins related to many computer management options

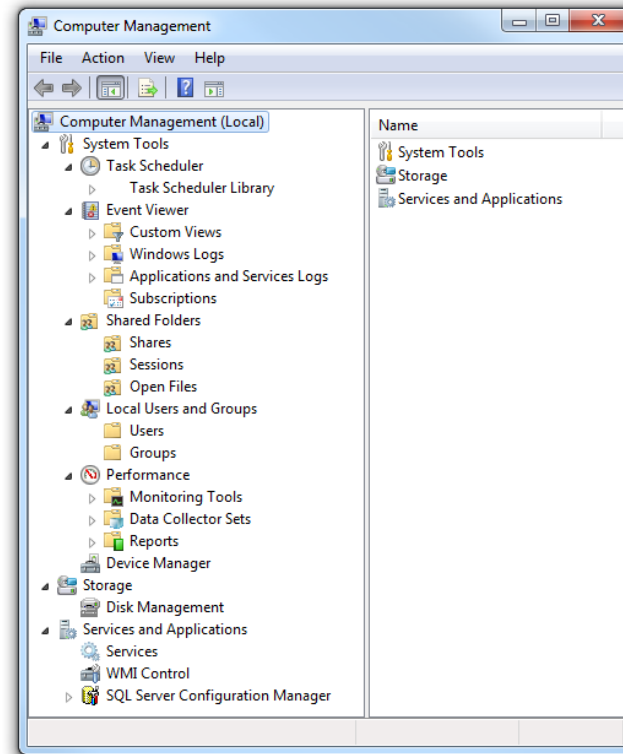


Figure 77: Computer Management applet

Event Viewer

- Keeps track of events that happen with your computer

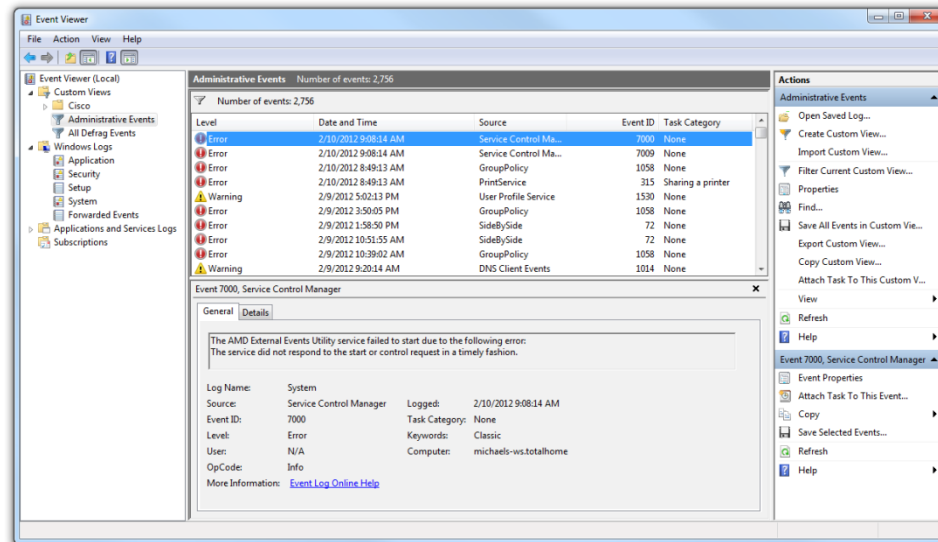


Figure 78: Event Viewer reporting system errors

Performance (Windows XP)

- **System Monitor shows real-time data**
- **Performance Logs and Alerts shows captured data**

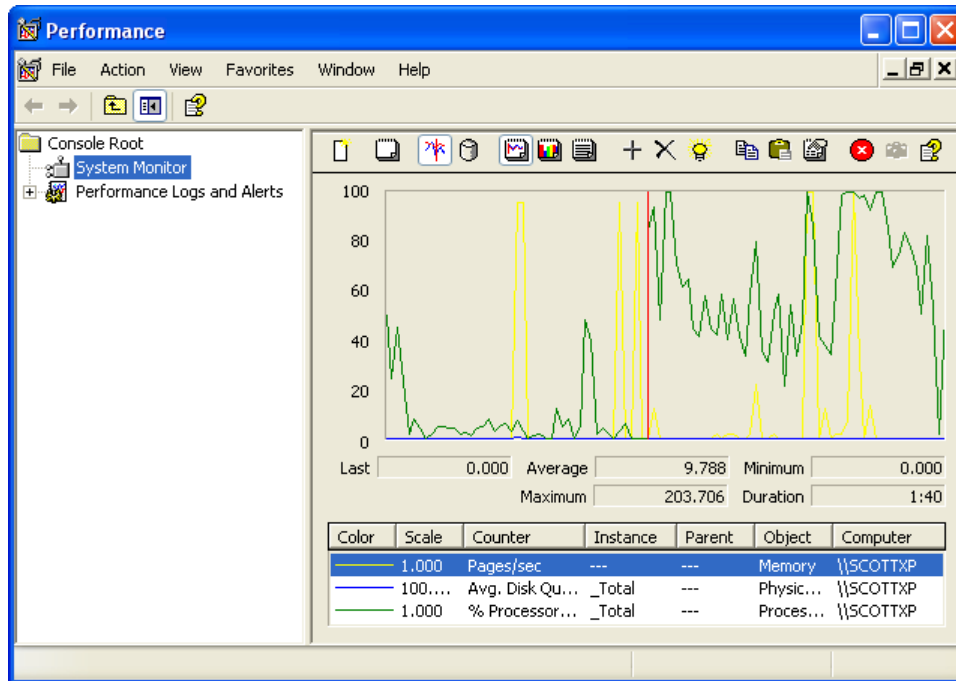


Figure 79: System Monitor in action

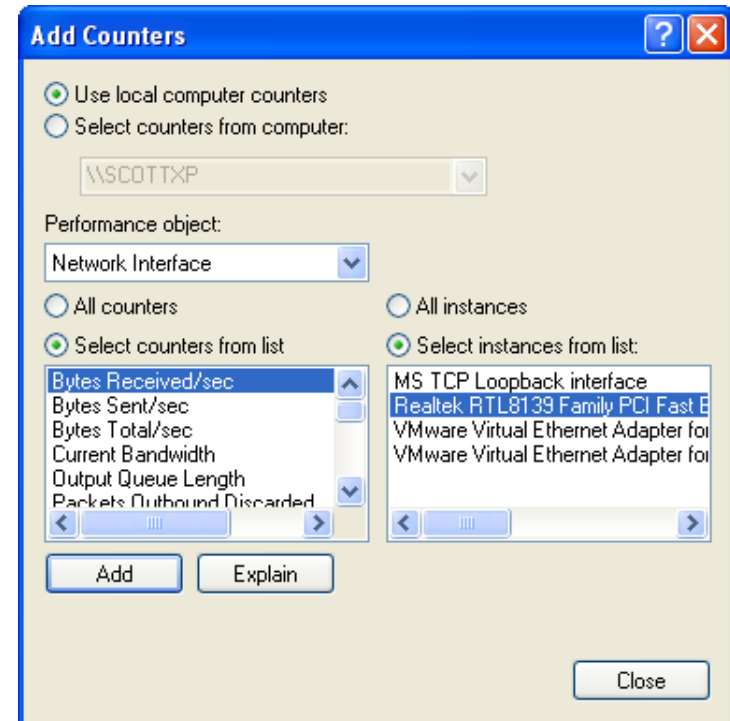


Figure 80: Setting up a throughput test

Performance (Windows XP) (continued)

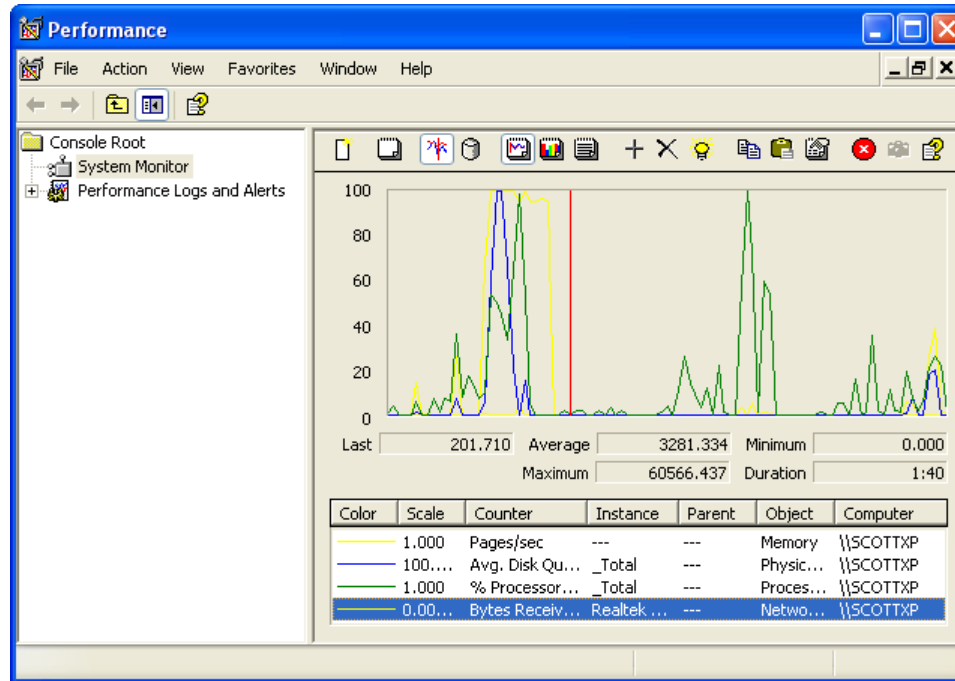


Figure 81: Downloading with blazing speed

Reliability and Performance Monitor / Performance Monitor (Windows Vista/7)

- **Vista/7's greatly enhanced performance tool**

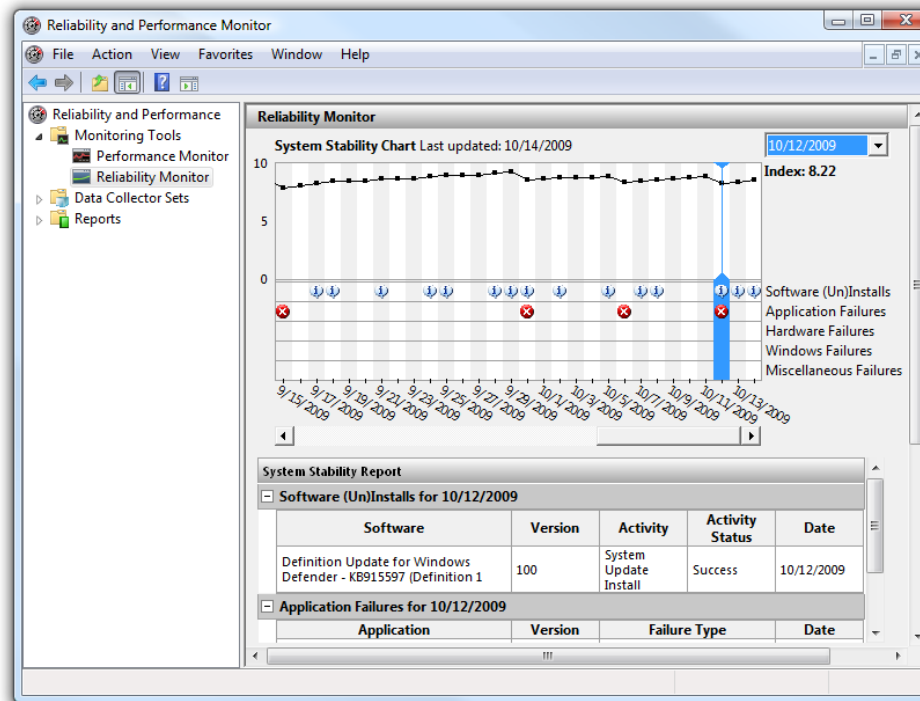


Figure 82: Reliability and Performance Monitor open to the Reliability Monitor screen in Vista

Services

- Programs that run behind the scenes

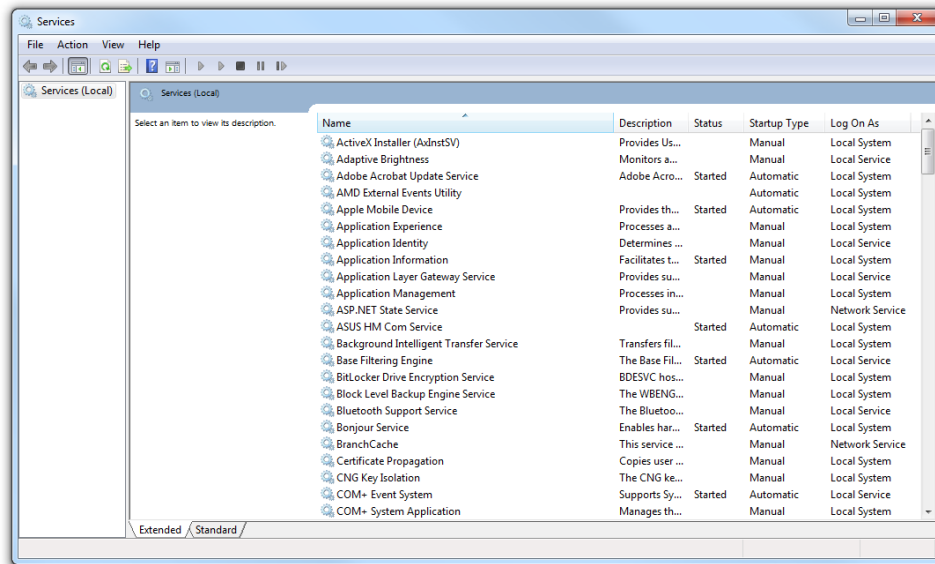


Figure 83: Services applet

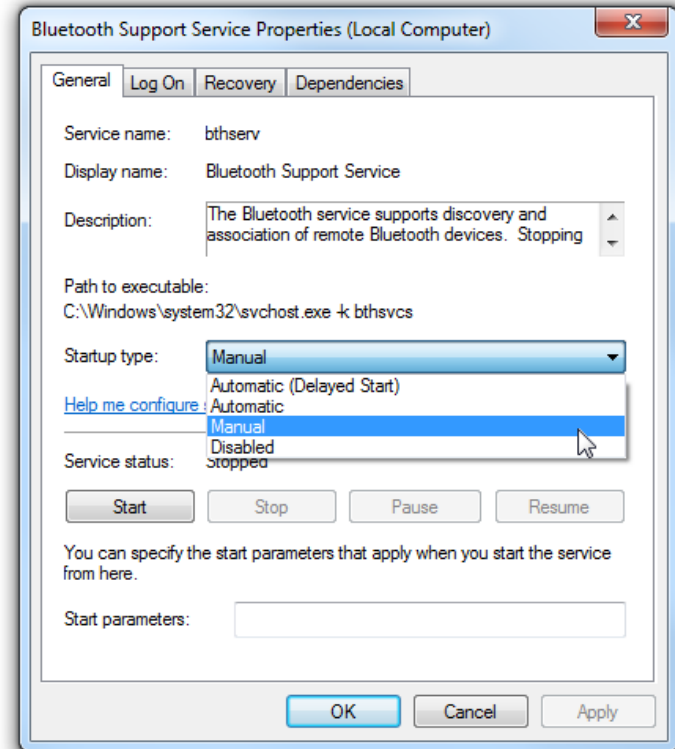


Figure 84: Bluetooth Support Service properties

Action Center (Windows 7)

- **Provides a one-page aggregation of event messages, warnings, and maintenance messages**
 - Separates issues into two sections, Security and Maintenance

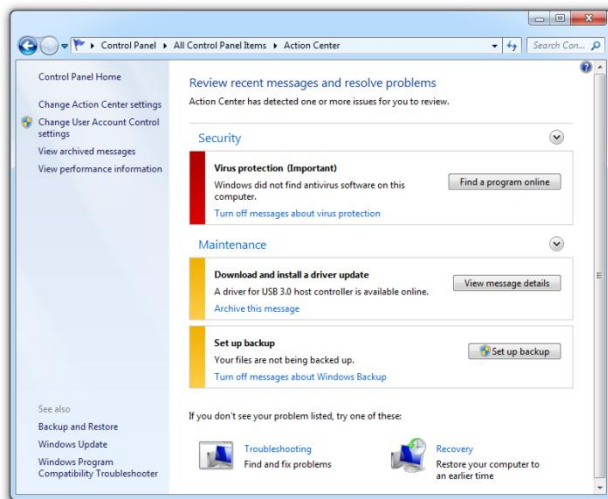


Figure 85: Action Center

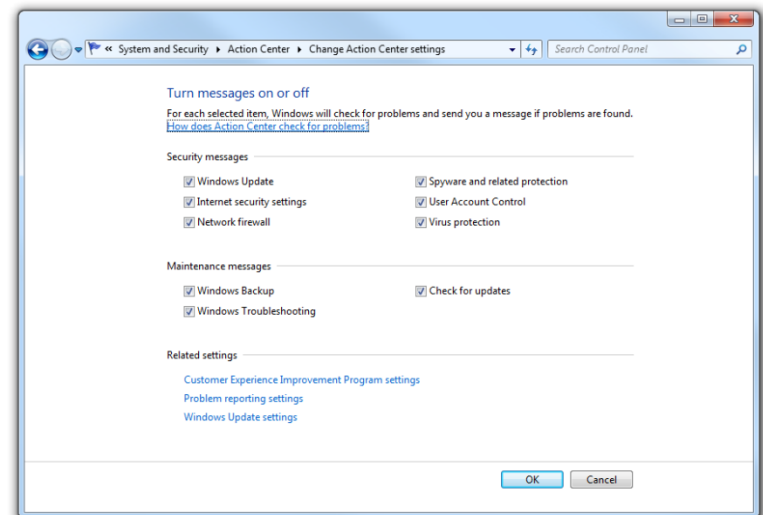


Figure 86: Change Action Center settings

Beyond A+

- **Windows 8**
 - Expected to launch in mid-late 2012
 - Not covered on the 220-801 and 220-802 exams
 - Seeks to unify multiple Microsoft platforms
 - New “Metro” interface
- **Windows Embedded**
 - Specialized OSs for embedded PCs
 - Examples include cell phones, cash registers, fighter jet components, etc.

Beyond A+ (continued)



Figure 87: The Windows 8 Metro UI

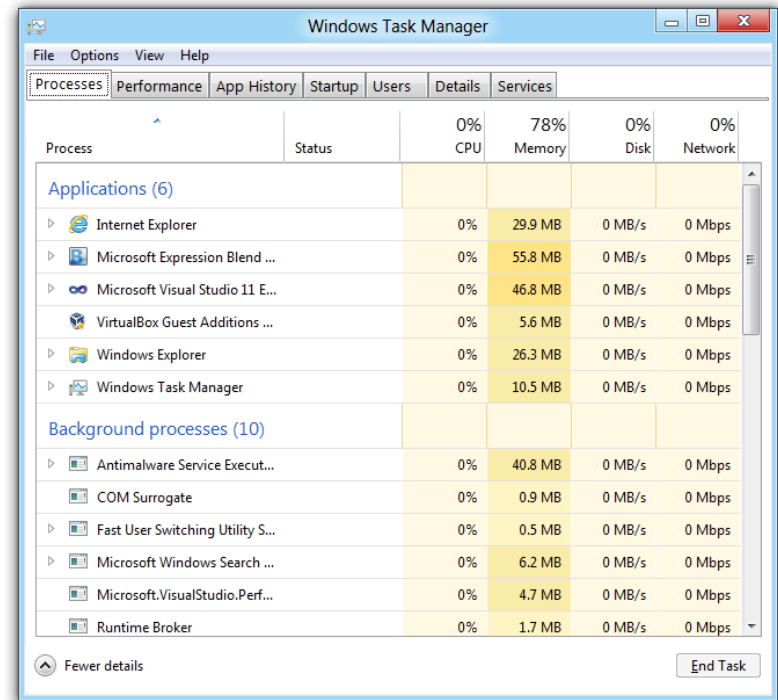


Figure 88: Windows 8's upgraded Task Manager