

Chapter 13

File and Disk Maintenance

LEARNING OBJECTIVES

1. Explain conditions that can cause hardware problems and how to avert these problems.
 2. Explain what lost clusters and cross-linked files are.
 3. Explain conditions that can cause data errors and how to avert these errors.
 4. Explain the purpose and function of Check Disk.
 5. Explain the purpose and function of Disk Cleanup.
 6. Compare and contrast contiguous and noncontiguous files.
 7. Explain how Disk Defragmenter can help optimize a disk's performance.
 8. Explain the purpose and function of Task Scheduler.
 9. Compare and contrast full, differential, and incremental backups.
 10. Explain the importance of and procedures for backing up and restoring files.
 11. Explain the purpose and function of the ADSR (Automated Recovery System).
 12. Explain the purpose and function of initialization files.
 13. Explain the purpose and function of the Registry.
 14. Explain the purpose and function of System Restore.
 15. Explain the purpose and function of a paging file.
 16. Explain the purpose and function of plug and play.
 17. Explain the purpose and function of Administrative Tools.
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STUDENT OUTCOMES

1. Use Check Disk to repair disk problems.
 2. Use Disk Cleanup to remove unneeded files.
 3. Use Disk Defragmenter to optimize a disk's performance.
 4. Use Task Scheduler to add and remove a scheduled task.
 5. Backup and Restore files.
 6. Create a restore point with System Restore.
 7. Use Device Manager to review your driver settings.
 8. Use System Information
 9. Use the Computer Management tool.
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CHAPTER SUMMARY

In this chapter, you learned that errors can happen to disks and also to files. These errors include cross-linked files and lost clusters. Check Disk checks disks for logical errors in the file system and for

Carolyn Z. Gillay, Bette A. Peat, *Windows XP Command Line*
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problems that involve the physical drive. You learned that you can fill up your disk quickly with temporary files that do not get deleted and with cached files. Disk Cleanup helps you keep your disk optimized by removing these unnecessary files.

You also learned that contiguous files are those that have been written to the disk in adjacent clusters. Noncontiguous files have been written in nonadjacent clusters and thereby create a fragmented disk. Fragmentation slows your access to the disk. Disk Defragmenter repairs fragmented files.

Windows XP Professional makes it easy to maintain your disk by letting you run Check Disk, Disk Cleanup, and Disk Defragmenter on a regularly scheduled basis by using Scheduled Task Wizard to schedule the tasks. You are not limited to scheduling only those tasks. Windows XP Professional also provides a tool called Task Scheduler that allows you to schedule any program to run at any time.

Another important aspect of any computer user's routine should be the regular backing up of data. You can easily accomplish this in Windows XP Professional with the Backup program. This program allows you to complete either full or incremental backups. You can back up the whole system or just selected files. You should also create an Automated System Recovery (ASR) disk in case your system fails. In addition, System Restore will restore your system to a working state. Restore points are created automatically, but you can create your own restore points as well.

Virtual memory is space on a hard drive used to simulate an environment in which more memory is available than actually exists on the system board. Additional memory is simulated by means of a virtual paging file on the hard disk. It is advisable to let Windows manage your virtual memory paging file if you have one hard drive in your system. If you have a second, faster hard drive in your system, you may consider taking over the management of the virtual memory paging file and moving it to the faster drive.

Windows XP Professional supports Plug and Play. Plug and Play means that when you install new hardware, Windows XP Professional automatically detects it so you do not have to install any new devices manually. You may review your device settings and update drivers as well as roll back drivers in Device Manager.

System Information allows you to gather information about your system as well as run various diagnostic tools. Microsoft Management Console (MMC) is a tool used to create, save, and open collections of administrative tools, called consoles. The Administrative Tools folder found in Control Panel contains shortcuts to tools that you frequently use. Many of these tools require that the user has administrator privileges. One very useful tool is Computer Management, which lets you explore and manage your computer system.

KEY TERMS

archive data	disk optimization program	Normal backup
backup	fragmented disk	paging file
cache	fragmented file	registration database
chain	full backup	restore point
configuration information	head crash	surge protector
cross-linked files	incremental backup	surge suppressor
defragger	initialization files	swap file
demand paging	legacy hardware	virus
differential backup	lost cluster	

LECTURE NOTES

CHAPTER OUTLINE

CHAPTER OVERVIEW

- How to avert hard drive problems and how to avert conditions that can cause data errors will be discussed.
- Will learn the purpose and function of and then use Check Disk, Disk Cleanup, Disk Defragmenter, and Task Scheduler.
- The importance of and procedures for backing up and restoring files are discussed.
- Will create an Automated System Recovery Disk for start up problems.
- The purpose and function of the Registry will be discussed.
- Will use the Computer Management tool to explore and manage your computer system.

DETECTING AND REPAIRING DISK ERRORS WITH CHECK DISK

- Detecting and Repairing Disk Errors with Check Disk
 - Physical hard drive problems.
 - **Wear and tear on hard disk.**
 - Minimize problem and conserve power with
 - **Power Management.**
 - **Hibernation.**
 - **Head crash.**
 - Minimize – place system where it will not get knocked around.
 - Software-related hard drive problems.
 - **Viruses.**
 - Causes.
 - Installing infected program.
 - Using a data file that has an embedded virus.
 - To minimize.
 - Purchase antivirus program.
 - Error causing conditions that may be repairable.
 - Power surges.
 - Minimize with surge protector.
 - Power outages.
 - Minimize with UPS.
 - Locked system.
 - Minimize by following shutdown process.
 - Check Disk comes with WXP
 - Locates/repairs problems on hard disk.
 - Checks for logical errors in file system.
 - Invalid entries in tables that keep track of file locations
 - Problems that involve physical disk, **lost clusters or cross-linked files.**

- **Lost clusters** – not uncommon.
 - FAT/directory work together to define where/what files are.
 - Each file has entry in directory table which points to starting cluster in FAT.
 - If file longer than one cluster - FAT pointer leads to next cluster
 - Pointers **chain** together all clusters that make up file.
 - If pointer lost – chain broken.
 - Broken chain is **lost cluster**
 - Incorrectly marked by FAT as used - Unavailable for new data.
 - **Lost clusters**
 - Belong to no file.
 - Cannot be retrieved/deleted.
 - Data useless.
 - Lose disk space.
 - **Reasons for lost clusters.**
 - Not exiting program properly.
 - Power surge/failures.
- Check Disk
 - Fix lost clusters automatically **or**
 - Save them to disk as files.
- **Cross-Linked Files.**
 - Two or more files claim same cluster as part of their chain.
 - One file claims same cluster twice.
- **Data in cross-linked file.**
 - Usually correct for only one file.
 - May not be correct for any file.
- Check Disk
 - **CAN** check/repair local hard drives, floppy disks, and removable drives.
 - **CANNOT** find/fix errors on CD-ROMs or network drives.
 - Only used on actual physical drives connected to system.
 - System must have exclusive access to disk to complete job.
 - Use on a regular basis.
 - **When using – close all open programs.**
 - Dealing with disk structure.
 - Open files/programs can cause data loss/corrupt files, etc.
- If disk (**volume**) formatted as NTFS, WXP automatically (without running Check Disk)
 - Logs all file transactions.
 - Replaces bad clusters.
 - Stores copies of key information for all files on NTFS volume.

ACTIVITY—USING CHECK DISK

- Using Check Disk
 - **MYDATADISK** disk should be in Drive A.
 - Activity steps.

- Open **Windows Explorer**
- Click **My Computer**
- Right-click **Drive A icon**
- Click **Properties/Tools/Check Now/ Start/ OK/OK.**
- Close **all open windows**
- Activity completed.

CLEANING UP YOUR DISK

- **Cleaning Up Your Disk**
 - Hard drive determines computer's performance.
 - All files stored on hard disk.
 - Want easy/quick access to files.
 - Need disk space for
 - New files.
 - Temporary files that programs create.
 - Documents waiting to be printed.
 - **Cache** files.
 - Recycle bin.
 - If files/caches not deleted frequently
 - Hard drive runs out of space.
 - System performance slowed down.
 - **Disk Cleanup.**
 - Utility tool.
 - Helps maintain disk space.
 - Intended for hard drives.

ACTIVITY—USING DISK CLEANUP

- **Using Disk Cleanup**
 - Activity steps.
 - Click
 - **Start/Programs/Accessories**
 - **System Tools/Disk Cleanup**
 - **Down arrow in drop-down list box**
 - **Outside drop-down list box/OK**
 - **Recycle Bin/View Files command button**
 - Close **Recycle Bin**
 - Click
 - **More Options tab/Clean Up** (under Windows Components)/**Cancel**
 - **Clean Up** (in Disk cleanup window under Installed Programs)/**Close**
 - **Clean Up** (in disk Cleanup window under System Restore)
 - **No/Disk cleanup tab/OK/Yes**
 - **Start/All Programs/Accessories**
 - **System Tools/Disk Cleanup/OK/Cancel**
 - Activity completed.

CONTIGUOUS AND NONCONTIGUOUS

- **Contiguous and Noncontiguous Files**
 - To store and retrieve files (data).
 - Disk divided into **sectors** (numbered blocks).
 - Sectors grouped into **clusters**.
 - Cluster set of contiguous sectors.
 - Number of sectors in cluster on hard disk varies – depends on:
 - Size of hard drive.
 - How it was installed.
 - File (usually) larger than one cluster.
 - WXP keeps track of location of all file parts.
 - When File deleted in FAT or FAT32
 - Only entries in FAT deleted.
 - Space file occupied available.
 - Writing files to a disk.
 - WXP tries to write to adjacent cluster.
 - Easier to retrieve/store information when file is contiguous.
 - Fragmented disk.
 - Disk composed of noncontiguous files.
 - Takes longer to read as head moves around disk to find all parts of a file.

OPTIMIZING PERFORMANCE OF DISKS

- Optimizing the Performance of Disks
 - **Defragger, disk optimization program or disk defragger.**
 - Utility program fixes fragmented disk.
 - Moves data around on a disk to make files contiguous.
 - Directory table and FAT rewritten so new locations of files are available.
 - Prior to running Disk Defragmenter.
 - Run Check Disk and Disk Cleanup.
 - Remove all lost or cross-linked clusters/unnecessary files.
 - Close all open programs.
 - Allow ample time.
 - **Back up disk as program manipulates disk.**
 - Disk Defragmenter used **only** on local drives.
 - Must have administrator privileges to use this utility program.

ACTIVITY—USING DISK DEFRAGMENTER

- Using Disk Defragmenter

- Place MYDATADISK disk in Drive A.
- Activity steps.
 - Click **Start/My Computer**
 - Right-click **Drive A icon**
 - Click **Properties/Tools tab/Defragment Now/OK/Drive C/Analyze button/View Report**
 - Scroll to bottom of **Volume Information list box**
 - Click **Close**
 - **If you have another drive, select it**
 - Click **Analyze**
 - **When analysis is complete** Click **View Report** and scroll to bottom of **Volume Information list box** then Click **Close**
 - Close **all open windows**
- Activity completed.

STARTING PROGRAMS AUTOMATICALLY

- Starting Programs Automatically
 - **Task Scheduler.**
 - Can schedule any program to run at any selected time.
 - Make sure program
 - Does not need user input.
 - Can exit when task completed.
 - Can be used to schedule tasks such as Disk Cleanup or Backup.

ACTIVITY—USING TASK SCHEDULER

- Using Task Scheduler
 - Activity steps
 - Click **Start/All Programs/Accessories/ System Tools/Scheduled Tasks/View/Tiles**
 - Double-click **Add Scheduled Task**
 - Click **Next/Disk Cleanup/Next/Weekly/ Next/Sunday/Next**
 - Enter **password** in second and third text boxes
 - Click **Next/Finish/View/Refresh/Advanced** (on menu bar)
 - Close **menu**
 - Click **Disk Cleanup/<Delete> key/Yes**
 - Close **Scheduled Tasks window/all open windows.**
 - Activity completed.

BACKING UP YOUR DATA

- Backing Up Your Data
 - Critical task (often neglected).
 - **Backup** = duplicate of file (s) on a disk copied to another medium.
 - Retrieve files by restoring them to original medium.
 - Advantage of backup vs. copy.
 - Backup file can span multiple backup disks.

- Working with WXP
 - Create settings, install/delete programs.
 - Adding/making changes to system **Registry**.
 - If Registry corrupt – cannot boot WXP
 - With backup – restore to what you had previously.
- Backup program supplied with WXP supports five methods of backups:
 - **Normal or Full backup**
 - Copies all files from hard drive to backup medium.
 - **Archive bit** turned off after files are backed up.
 - Archive bit **OFF** – Backup knows file has been copied.
 - When file edited - archive bit turned **ON**.
 - Copying file – attribute not altered by copy routine.
 - Archive bit altered by certain programs such as Backup.
 - **Incremental Backup.**
 - Only copies files that have changed or created since last normal or incremental backup.
 - Marks files as having been backed up by clearing archive bit.
 - **Differential backup.**
 - Copies files that have changed or created since last normal or incremental backup.
 - Does not mark files as having been backed up.
 - Does not clear archive bit.
 - **Daily Backup**
 - Backs up modified files only on day backup performed.
 - Files not marked as having been backed up.
 - Archive bit is not cleared.
 - Option requires Backup run on daily basis.
 - **Copy Backup**
 - Backs up selected files.
 - Does not mark files as having been backed up.
 - Archive bit not cleared.
- Comparing full backups to incremental backups.
 - Full backups –
 - Longer to backup but shorter to restore.
 - Incremental backups
 - Longer to backup but shorter to restore.
- Usually use combination of:
 - **Full backups and incremental backups**
 - Restore most recent full backup media and all incremental media that have changes on them.
 - Takes least amount of storage
 - Quickest method for backing up
 - Restore takes longer – need all tapes and disks.
 - **Full backups and differential backups.**
 - More time consuming

- Restore faster/easier because backup data stored on fewer disks/tapes.
- Restore most recent full backup media and all incremental media that have changes on them.
- Differential backup backs up selected files that have changed since last normal or incremental backup.
- All files that have archive bit on are backed up
- Backup complete – archive bit is left on.
- Need regular backup schedule.
 - Determined by computer usage and how often files are edited.
- If on network
 - Network administrator – takes care of full backup.
 - You take care of data files.
- Wise to have more than one copy of backup media.
 - Do not store both copies in one place (fire and theft problems).
- To access Backup
 - Right-click a drive/Choose Properties/Tools Tab/and select Backup Now command button.
 - Can also access Backup from Programs submenu.
- Backup can be used to
 - Archive data.
 - Make room on hard disk by copying seldom-used files to backup medium.
 - Transfer programs/files to other computers.
 - Make new computer look like old system.

ACTIVITY—USING BACKUP

- Using Backup
 - Place MYDATADISK disk in Drive A
 - Activity steps.
 - Click **Start/All Programs/Accessories/ System Tools/Backup**
 - Switch to *Wizard*
 - *Always Start in Wizard Mode* should have a check mark
 - Click **Next/Backup files and Settings/Next/Let me choose what to backup/Next/plus sign next to My Computer**
 - **Expand Drive C**
 - Locate and expand **WUGXP folder**
 - Click **WUGXP in left pane** – be sure not to place a check mark in the box
 - In right pane locate and check boxes in front of **AST.99/AST.NEW/AST.TMP/ASTRO.TMP/ASTRO.TXT**
 - Click **Next**
 - Select **Backup** and key in **ASTRO**
 - Click **Next/Advanced/down arrow in drop-down list box/Next**
 - Clear **all options**
 - Click **Next/Next**
 - **Now is selected**
 - Click **Next/Finish/Report button**
 - Close **Notepad** then Click **Close**

- Open **Windows Explorer/Drive A**
- Close **Drive A window**.
- Activity completed.

RESTORE

- Restore
 - Backup option/Restore Wizard
 - Used to copy some/all of files to original disk/another disk/or directory.
 - Can choose which backup set to copy from.
 - To restore
 - Choose Restore and type of restoration.
 - OR Choose Restore Wizard.

ACTIVITY—RESTORING FILES

- Restoring Files
 - Activity steps.
 - Click
 - **Start/All Programs/Accessories**
 - **System Tools/Backup/Next**
 - **Restore files and settings/Next**
 - **MYDATADISK is in Drive A**
 - Click **plus sign in left pane**
 - **In right pane, click last entry in list**
 - In left pane, click **check box** (next to Drive C)/**Next/Advanced command button/down-arrow** (in Restore files to drop-down list box)
 - Click
 - **Original location/Next**
 - **Replace existing files/Next/Next**
 - **Finish/Report command button**
 - Close **Notepad/Restore Progress dialog box**
 - Click
 - **Start/All Programs/Accessories**
 - **System Tools/Backup**
 - **Advanced Mode/Restore and Manage Media tab/Schedule jobs tab**
 - Close **Backup window**
 - Activity completed.

AUTOMATED SYSTEM RECOVERY (ASR)

- Automated System Recovery (ASR)
 - Built in repair system for a catastrophic failure of system.
 - Saves information about disk partitions arrangements, system files and detected hardware
 - Saves contents of system drive to some backup media.
 - During process creates floppy disk that is pointing to location of backup files.
 - Feature not available on WXP Home Edition.
 - Repair system relies on creation of an Automated system Recovery (ASR)
 - Created in Advanced Mode of Backup

- Need ASR, availability of backed up system files & WXP installation CD to:
 - Boot system.
 - Repair corrupted system.
 - Fix corrupt Registry.
- Does not save program files or data files.
 - Not substitute for backing up data.
- Used for system problems.
- Restores system, as it was when ASR was made/upgraded.
- To repair damaged version of WXP
 - Boot system from WXP installation CD or setup floppy disk.
 - Asked if you want to install WXP or repair damaged version.
 - To Repair, press <F2> and follow directions.

THE REGISTRY

- The Registry
 - WXP is customizable
 - OS keeps track of **Configuration information**
 - System information i.e. hardware, applications, users.
 - **PREVIOUS VERSIONS OF WINDOWS**
 - **Initialization files** (used in previous versions of Windows).
 - .INI file extension (comes from **initialization files**).
 - Used to store information (users, environmental parameters, and necessary drivers.)
 - Two types of initialization files in
 - System initialization files.
 - Windows created the system .ini files (WIN.INI and SYSTEM.INI).
 - Configuration files contained info Windows needed
 - To run itself.
 - To run programs installed on specific computer.
 - Private initialization files.
 - Application programs create private .INI files.
 - Kept track of state of application, i.e., screen position or last-used files.
 - W had two primary initialization files.
 - To run windows both files were needed.
 - WIN.INI file
 - Information on how system behaved.
 - Primary location for software configuration information.
 - Specific system-wide information added by software application.
 - SYSTEM.INI file.
 - Pointed OS to correct hardware and software components such as device drivers.
 - Primary location for computer hardware system information.
 - Also used REG.DAT file.
 - Registration database

- Information about
 - How various applications open.
 - How some print file extensions.
 - How OLE objects handled, etc.
- Not ASCII file
- Only edited by REGEDIT
- **NOW WINDOWS XP USES SINGLE LOCATION, CALLED REGISTRY FOR HARDWARE, SYSTEM SOFTWARE AND APPLICATION CONFIGURATIONS INFORMATION.**
 - Old files available for legacy application programs.
- Registry Information comes from
 - Installation of Windows XP.
 - Booting of Windows XP.
 - Applications.
 - System and user interaction.
- Every part of W uses Registry
- Registry files kept in %SystemRoot%\System32\Config.
- Registry files (backed up) kept in %SystemRoot%\Repair\RegBack.
- Registry can be restored by
 - Use ASR disk – choices available to restore Registry by using Recovery Console.
 - Text based command interpreter – allows system administrator to access hard disk and files.
 - Beyond scope of text.
 - “Last Known Good Configuration” option –
 - Use arrow to highlight title then press <Enter>
 - Safe Mode – Press <F8> key
 - Loads minimum amount of drivers and functionality that allows Windows XP to run.
 - Go into safe mode – presented with Startup menu
 - Allows you to troubleshoot different types of problems.
 - System Restore – easier way to solve many problems.

SYSTEM RESTORE

- System Restore
 - Used to undo changes made to computer and restore computer to “Desirable State”
 - Does the following:
 - Rolls back computer to more stable state.
 - System Restore keeps track of changes made at specific times
 - Tracks when new software program installed
 - Above times called restore points
 - Can create own personal points
 - Restore points allow you to “roll back” your computer system to a time when everything was working correctly.
 - Saves email messages, browsing history, and so on
 - Does not save or restore documents.

- Is for computer system **not** data files
- May select which dates you want to restore to (use calendar)
- Provides several restore points
 - Creates initial system checkpoint when you upgrade or install WXP
 - Regular checkpoints created daily and at significant events
 - Restore points created prior to update if Windows Automatic update is used.
- All system restores are reversible.
 - If restore point selected not successful – can undo it.

ACTIVITY – USING SYSTEM RESTORE

- Using System Restore
 - **Activity cannot be done in lab environment**
 - Activity steps.
 - Click
 - **Start/All Programs/Accessories**
 - **System Tools/System Restore**
 - **Create a restore point/Next**
 - Key in Pre-Wonder
 - Click
 - **Create/Close/Start/All Programs**
 - **Accessories/System Tools**
 - **System Restore**
 - **Be sure *Restore my computer to an earlier time* is selected.**
 - Click **Next/Show previous button/Cancel**
 - Activity completed.

PLUG AND PLAY AND DEVICE DRIVERS

- Plug and Play and Device Drivers
 - Prior to W95, adding hardware was an involved process.
 - Physically added hardware.
 - Each component needs access to system resources (such as **IRQ** and **DMA** channels).
 - Make software changes.
 - Hardware devices need software support found in **driver files** that must be installed.
 - Need some technical expertise to adjust settings so hardware devices work.
 - Plug and Play (Plug it in and play it).
 - Industry standard developed by Intel and Microsoft.
 - Automates adding new hardware to computer.
 - WXP better than W95/98/2K Professional
 - Process.
 - Install hardware.
 - Boot system.
 - Windows XP
 - Detects hardware device.
 - Makes appropriate adjustments to system.
 - Windows XP added support for new types of devices.

- Universal serial bus (USB).
- USB devices share common connector – do not need to be configured manually.
- IEEE 1394 – high-speed serial bus.
- Used by devices that need fast data transfer (Scanners/Video cameras.)
- For Plug and Play to work, need
 - Computer with Plug and Play compatible BIOS.
 - Device to be installed is Plug and Play compatible.
 - OS is Plug and Play compatible (W2000 is).
- Full support in WXP requires
 - Advanced Configuration and Power Interface (ACPI) compliant system board.
 - BIOS.
 - OS – WXP.
 - Device to be installed.
 - Drivers for that device.
- Legacy hardware.
 - Hardware that is not Plug and Play compatible.
- WXP solves hardware conflicts with older computer/devices.
 - Use Add/Remove Hardware wizard in Control Panel.
 - If hardware conflicts occur use Device Manager.
 - To add updated drivers.
 - Help identify problems.

ACTIVITY—LOOKING AT PLUG AND PLAY

- Looking At Plug and Play
 - Activity steps.
 - Click
 - **Start/My Computer/Properties**
 - **Hardware tab/Device Manager**
 - Expand and then collapse **Computer entry**
 - Locate and double-click **System devices**
 - Right-click **Plug and Play Software Device Enumerator**.
 - Click
 - **Properties/Driver tab** (if available)
 - **Driver Details/OK/Cancel**
 - **Minus sign next to System Devices**.
 - Select and expand **Sound, video and game adapters**
 - Right-click **sound card**.
 - Click **Properties/Driver tab/Cancel**
 - Collapse **entry**
 - Close **all open windows**.
 - Activity steps.

THE PAGING FILE

- The Paging File
 - Previously called swap file.
 - Space on hard drive used as **virtual memory** when system runs out of physical memory.
 - Paging file is dynamic (shrinks/grows).
 - Pros/cons of paging file.
 - Slows down performance.
 - Using disk vs. memory.
 - Gives user more “room” in which to operate.
 - Can set place and size of paging file.
 - Microsoft recommends letting Windows manage paging file.
 - Reasons for setting place/size of paging file.
 - Second hard drive free of executable programs.
 - Large hard drive with little information.
 - Increases paging file size.
 - Place paging file on drive with fastest access time.

ACTIVITY – LOOKING AT SETTING UP YOUR PAGING FILE

- Setting Up Your Paging File
 - Activity steps.
 - Click **Start**
 - Right-click **My Computer**
 - Click
 - **Properties/Advanced tab**
 - **Settings command button** (in Performance Options)
 - **Advanced tab/Change command button**
 - **Question mark in title bar**
 - **Initial size (MB) text box**
 - **Cancel/Cancel/Cancel**
 - Activity completed.

ADMINISTRATIVE TOOLS AND SYSTEM INFORMATION

- Administrative Tools and System Information
 - **System Information**
 - Collects/displays system configuration information for local/remote computers
 - Includes hardware configuration, computer components, and software (including driver information).
 - Used to view/access different tools
 - Use to find information required by support technicians.
 - Saves data files in files with .nfo extensions
 - **Microsoft Management Console (MMC)**
 - Tool to create/save/open collection of administrative tools (**console**).
 - Framework that hosts administrative tools.

- Contains many items required to manage hardware, software, and networking components of WXP
- **Go over Figure 11.5 Administrative Tools, (PowerPoint slide)**
 - **Component Services.**
 - Programming tool used to create/configure/maintain COM applications.
 - Tool rarely used by user.
 - **Computer Management.**
 - Manage disks, and local and remote computers.
 - Has information about computer system.
 - **Data Sources (ODBC).**
 - Programming/Administrative tool to access data from various database management systems.
 - **Event Viewer.**
 - Gathers hardware/software and system problems information.
 - Monitors security events.
 - **Local Security Policy.**
 - Allows Security administrator to configure security levels for local computer policies.
 - **Performance.**
 - Logging counter/event data/generating performance alerts features.
 - **Services.**
 - Can start/stop/pause/resume services on remote and local computers.
 - Can configure startup and recover options.
 - Services include tasks as running scheduled tasks or starting network connection.

ACTIVITY—USING SYSTEM INFORMATION AND COMPUTER MANAGEMENT

- Using Computer Management
 - Activity steps.
 - Click **Start/All Programs/Accessories/ System Tools/System Information**
 - Expand **Hardware Resources.**
 - Click **IRQs/Tools**
 - **Collapse hardware resources**
 - **Close System Information window**
 - Click **Start/Control Panel**
 - Double-click **Administrative Tools/Computer Management**
 - **Storage should be expanded**
 - Double-click **Disk Management**
 - Close **Computer Management/Control Panel**
 - Activity completed.