

Unit 2

Troubleshooting System Startup and User Logons

Complete this unit and you'll know how to:

- A** Troubleshoot the Windows XP boot process.
- B** Troubleshoot user logons.

Topic A: Windows XP Boot Process

Explanation

On the surface, booting a computer might seem simple. In reality, however, it is a complex process. In fact, it is critically important to your success as an MCDST that you understand each step of the boot process.

In this topic, you learn the steps Windows XP takes during the boot process, from the time you turn on a computer and the computer looks for an operating system, to the appearance of the logon dialog box. It is only at this point that the Windows XP boot process is considered complete.

The Windows XP Boot Phases

As a Windows Desktop Support Technician, you will need to have a solid understanding of the startup processes a computer system goes through when powered on. Being familiar with the start processes will make you better equipped to deal with strange problems and have a greater likelihood of resolving them quickly.

In Windows XP, the boot process is broken down into two major phases: the boot phase and the load phase. The boot phase takes place when the computer is first powered on or when you choose Restart from the Turn Off Computer dialog box. This dialog box appears when you select Turn Off Computer from the Start menu. As soon as the boot phase is completed and a configuration is selected, the load phase begins.

The six steps of the Windows XP boot phase are as follows:

- Power-On Self Test (POST)
- Initial startup
- Boot loader
- Operating system selection
- Hardware detection
- Configuration selection

You'll learn more about each step in the following sections.

Power-On Self Test

The *Power-On Self Test (POST)* is the first step in the boot sequence for any computer with an operating system. The POST determines the amount of real memory that exists and whether or not all necessary hardware components, such as a keyboard, are present. The actual tests can differ, depending on how the Basic Input/Output System (BIOS) is configured. If the tests are successful, the computer boots itself. If the tests are unsuccessful, the computer reports the error by emitting a series of beeps and possibly displaying an error message and code on the screen. The number of beeps indicates the error; however, the number of beeps differs from one BIOS to another. (If your end-user is present for the beeps, be prepared for questions about what they mean. You don't have to give the technical details; just the basics will suffice.)

The POST software resides in the system’s primary BIOS chip, which can store not only the software necessary to conduct the POST but also basic startup instructions that let the PC start the loading of an operating system.

After the system POST is completed, each adapter card in the system performs its own self-test. For example, if a computer has a SCSI card in addition to its own built-in adapter cards, it checks its internal configuration and any related devices it sees when it runs its own POST. At the same time, a report on what this process finds appears on the computer monitor in text-only form (as no real operating system is currently running, screen output at this stage of the boot process is kept as simple as possible).

Initial Startup

The initial startup sequence involves numerous files and initialisation procedures. The first sector of the hard disk contains the *Master Boot Record (MBR)* and the *partition table*. The MBR begins the boot process by looking up the partition table to determine which partition is active. The *active partition* is marked as such because it contains the operating system files that must be loaded first.

The active partition from which the computer initially boots is also termed the *system partition*. The system partition hosts the boot menu and startup files. The partition on which the main Windows XP files reside is termed the *boot partition*. These terms can seem backward but they are the official Microsoft terms. The system and boot partition can be the same partition or different; however, the system partition must be the active partition.

The files in the initial startup are described in the following table. Bootsect.dos is used only with dual-boot PCs with DOS operating systems; Ntbootdd.SYS is only used when SCSI controls don’t have onboard BIOS enabled.

File	Location	Description
Ntldr	Root of the startup disk	Locates and loads Windows XP
Boot.ini	Root of the startup disk	Windows XP PC boot menu data
Bootsect.dos	Root of the startup disk	DOS boot information for dual-boot PCs
Ntdetect.com	Root of the startup disk	XP hardware detection program
Ntbootdd.sys	Root of the startup disk	Lets Windows XP access SCSI drives on PCs with a SCSI controller and with onboard BIOS disabled
Ntoskrnl.exe	%systemroot%\System32	Windows XP operating system kernel
Hal.dll	%systemroot%\System32	Hardware abstraction layer code (CPU driver for x86 chips)
SYSTEM key	%systemroot%\System32	Key Windows XP Registry data
Device drivers	%systemroot%\System32	PC-specific device drivers for XP use

When the POST has successfully concluded, the BIOS tries to locate the startup disk. If a floppy disk is in drive A when the BIOS checks that drive, it might use that drive as the startup disk. This decision depends on how the boot sequence has been configured in the computer's CMOS. If there is no floppy disk in that drive or if the CMOS has been configured to boot from a hard disk, it uses the first hard disk it finds as the boot disk.

When the BIOS uses the hard disk as its startup disk, it reads the MBR and loads that into memory. The BIOS then transfers system control to the MBR. In general, the MBR is independent of the operating system. For example, the same MBR is used in x86 systems to boot to MS-DOS and Windows.

The MBR scans the partition table to locate the system partition. When the MBR locates the system partition, it loads sector 0 of the partition into memory and executes it. Sector 0 (zero) can contain a diagnostic program, a utility such as a virus scanner or a *partition boot sector* that contains the startup code for the operating system. If the computer boots from a floppy, only the partition boot sector is used.

The partition boot sector is completely dependent on the operating system and file system in use. For example, the partition boot sector in a Windows XP computer is responsible for a number of functions that are specific to the operating system. The partition boot sector must understand enough of the file system in use to find Ntldr. On a hard drive with a FAT partition, the partition boot sector is generally one sector long and points to another location on the disk that ultimately permits the computer to find and launch Ntldr. On an NTFS partition, because the partition boot sector can be as many as 16 sectors long, it can contain all the necessary file system code needed to locate and launch Ntldr, without requiring transfer of control to another area on the disk. Thus, the partition boot sector is responsible for loading a boot loader (Ntldr) into memory and initiating boot loader execution.

At this point, the system partition, the partition that contains the MBR and partition boot sector, must be on the first physical hard drive in the system. However, the boot partition—the partition that contains the Windows XP files—can be on the same partition, a different partition on the same drive or on another drive entirely within the local computer. In other words, you boot Windows XP from the system partition and run the operating system from the boot partition.

This terminology seems counterintuitive but is important to remember for Microsoft exams. One way to keep the terms straight is that the files needed to choose the operating system (Ntldr, Bootsect.dos and so on) are located on the system partition and the files for booting the chosen operating system (Windows NT, Windows XP and so on) are on the boot partition.

There's one possible error at this point that you should keep in mind. If the floppy drive is enabled for booting and the floppy disk you have inserted in that drive does not have a partition boot sector, you receive the following error message: "Non-System disk or disk error: Replace and strike any key

when ready.” When this happens, the system won’t start. This is one of the most common causes of boot failure in the Windows XP environment and it can cause some end-users to panic. (Be polite when telling them the simple solution to this error.)

To resolve the “Non-System disk or disk error” message when the system attempts to boot from a non-system floppy, remove the floppy and cycle the power off and on again. It is important to do this (rather than restarting with Ctrl+Alt+Delete or pressing any key if prompted) to avoid transferring boot-sector viruses to the computer.

Boot Loader Initialisation

The *boot loader* is the collection of files on the system partition that is used to initiate the loading of the operating system. The boot loader will display a boot menu if more than one operating system is present or if an advanced boot option is needed. Once an operating system or boot option is selected, the specific operating system is loaded from the boot partition. On PCs, once the boot operating system is selected from the boot loader menu, Ntldr controls the operating system selection and hardware detection processes before the Windows XP kernel is initialised.

Ntldr, Boot.ini, Bootsect.dos, Ntdetect.com and Ntbootdd.sys may all be present in the root directory of the startup disk. (Some files might be dimmed because they have the read-only attribute.) The partition hosting the boot loader can be formatted with FAT, FAT32 or NTFS. Of this collection of files, Ntldr, Ntdetect.com and Boot.ini must always be present for Windows XP to boot.

At this point, Ntldr switches the processor into 32-bit flat memory mode. When an x86 computer starts, it is running in real mode, which means it is functioning as an old-fashioned 8088 or 8086 computer. Because Ntldr is a 32-bit program, it must change the processing mode to support the 32-bit flat memory model it uses before it can perform any further processing.

Next, Ntldr starts the appropriate file system. The code to access both FAT and NTFS file systems is programmed into Ntldr so that it can read, access and copy files on either type of file system.

Operating System Selection

Ntldr reads the Boot.ini file and displays the operating system selections it contains. The screen that appears at this point is usually called the boot loader screen or the boot loader menu and it represents the point at which users can select which operating system they want to load or which form of Windows XP graphics operation they want to use.

When you do not manually alter the highlighted selection of the boot loader menu, a line below the menu displays a 30-second counter. If a selection is not made before the counter reaches zero, the highlighted operating system starts automatically. To change the default operating system to load or the amount of time to wait before automatically loading the highlighted operating system, you must change the settings in the Boot.ini file. In addition, pressing the up arrow or down arrow key halts the timer.

If the user selects an operating system other than Windows XP, Windows Server 2003, Windows 2000 or Windows NT, the boot loader loads `Bootsect.dos` and hands over control of the system. The other operating system then starts normally because `Bootsect.dos` contains the partition boot sector for that operating system. However, if the user selects a version of Windows XP, the boot loader executes `Ntdetect.com` to gather hardware information. `Ntldr` maintains control of the computer until it loads `Ntoskrnl.exe` and passes the hardware information and system control to that program.

Hardware Detection

`Ntdetect.com` is executed by the boot loader and is used to collect a list of hardware currently installed in the computer. `Ntdetect` checks the computer ID, bus/adaptor type, video, keyboard, communication ports, parallel ports, floppy disks and mouse or pointing devices. `Ntdetect` creates a system profile that is later compared to Windows XP Registry entries that describe the system so that the operating system can look for discrepancies or potential problems.

Configuration Selection

Once hardware is detected, the system needs to select a system configuration, otherwise known as a *hardware profile*. If a single hardware profile is defined, this is the one that is used. If two or more hardware profiles are present, the system attempts to select a profile based on detected hardware. If the system cannot make an automatic selection, you are prompted to manually select a hardware profile.

Hardware profiles can be difficult for end-users to understand. Explain it to them like this: A hardware profile is basically a user profile for hardware. The hardware profile controls which device drivers are loaded based on whether a device is enabled or disabled. Hardware profiles are most commonly used on portable systems such as notebook computers that need some devices disabled, such as modem or network adapter, depending on where it's connected.

The Windows XP Load Phases

Explanation

Once you've selected the option to boot into Windows XP, the kernel is loaded. When the kernel assumes control of the computer, the Windows XP load phase begins.

The Windows XP load phase consists of the following five stages:

- Kernel load
- Kernel initialisation
- Services load
- Windows XP system startup
- Log on

Kernel Load

After you choose to boot into Windows XP, a brief Starting Windows text

message is displayed before the full Windows XP splash screen is shown. At this point, the boot loader loads the Windows XP kernel (Ntoskrnl.exe) and the hardware abstraction layer (Hal.dll) into memory. However, these programs are not executed at this time. Before executing the programs, the boot loader loads the Registry key HKEY_LOCAL_MACHINE\SYSTEM from the %systemroot%\system32\config folder.

At this point, the boot loader retrieves the configuration you selected from the Registry subkey HKEY_LOCAL_MACHINE\SYSTEM>Select. Based on the ControlSet00x setting in the subkey, the boot loader knows which ControlSet00x to use. A *control set* is a special set of Registry values that describes a Windows XP machine's startup configuration. It is saved each time a Windows machine is shut down and each time a user successfully logs on for the first time after startup.

The boot loader then loads the drivers listed in the Registry subkey HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services. These drivers are loaded and initialised according to their settings in the Registry.

Initialising the Kernel

After its initialisation, the kernel creates the Registry key HKEY_LOCAL_MACHINE\HARDWARE by using the information received from the boot loader. This key contains the hardware information that is collected when the system is started up and includes information about components on the system board and the interrupts used by specific hardware devices.

The kernel also creates the CloneControlSet by making a copy of the CurrentControlSet. The Clone set is never modified, because it is intended to be an identical copy of the data used to configure the computer and should not be modified during the startup process.

The kernel then initialises the drivers that were loaded by the boot loader. If drivers experience errors as they load, they send conditions to the kernel that determine how the error is treated.

The error levels are as follows:

- **Ignore**—The error is ignored. In addition, no message is displayed to the user if the ignore condition is sent to the kernel.
- **Normal**—The boot process continues but a message is displayed to the user if the device driver returns the normal error condition.
- **Severe**—The management of this error depends on whether the Last Known Good Configuration is in use or not. If Last Known Good is not being used, then the error is displayed to the user and the boot process restarts using the Last Known Good. If Last Known Good is already in use, then the message is displayed and the boot process continues.
- **Critical**—The management of this error depends on whether Last Known Good is in use or not. If not, then the error is displayed to the user and the boot process restarts using Last Known Good. If

Last Known Good is already in use, then the message is displayed and the boot process fails.

All such events are saved automatically in the system log in Event Viewer and produce on-screen messages as well. You should always check Event Viewer whenever errors are reported during the boot process. Because that process cannot be interrupted, however, it's necessary to wait and inspect the log after the computer has fully started.

Services Load

During the services load phase, the kernel starts the Session Manager, which reads the entries that are stored in

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager.

It then starts programs that correspond to the key entries under HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\BootExecute.

The default entry for this key is *autocheck autochk*. Autocheck makes sure that the files stored on your hard drive are always consistent. It detects and attempts to repair damaged files and directories. As with any repair utility, it cannot guarantee that all files can be fixed or retrieved.

Once Autocheck is complete, the paging files are set up. These are stored under HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management.

The Session Manager then writes the CurrentControlSet and the CloneControlSet to the Registry and, finally, loads the subsystems that are defined in the Registry.

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Subsystems contains the subsystem information. The Windows (Win32) subsystem is the default subsystem for Windows XP and is also the subsystem within which the default user shell always executes.

Windows XP System Startup

Once the Windows XP services have all started and the elements in the group of processes that are configured to launch on startup are fired off, the Windows XP system can be considered fully started. This brief but meaningful phase of the process is signalled by the appearance of the Windows XP logon screen as the Win32 subsystem starts winlogon.exe and that process automatically launches the Local Security Authority (Lsass.exe) process.

Log On

Until a user successfully logs on, the boot process is not complete until the Clone control set is copied to the Last Known Good control set. This procedure provides the values to be used the next time the machine is powered up, if the user elects to use the Last Known Good Configuration.

Advanced Startup Options

Explanation

Windows XP has combined the boot and recovery options of Windows 2000, Windows NT and Windows 9x. The result is a more robust operating system and additional options to restore a malfunctioning system to a functional state. To access the additional startup options, when the boot menu appears, press F8 before the timer expires. Once F8 is pressed, the Windows Advanced Options Menu appears.

The menu choices you'll see on a Windows XP computer are described in the following table:

Menu choice	Description
Safe Mode	Boots Windows XP with only the minimum required system files and device drivers. Safe Mode does not load networking components.
Safe Mode with Networking	Boots Windows XP in the same manner as Safe Mode but adds networking components.
Safe Mode with Command Prompt	Boots Windows XP in the same manner as Safe Mode but boots to a command prompt instead of to the GUI environment.
Enable Boot Logging	Enables or disables the boot process and writes details to a log file regarding drivers and services. The log file is located at %systemroot%\Ntbtlog.txt.
Enable VGA Mode	Boots Windows XP normally but uses only the basic VGA video driver in 640 x 480 mode.
Last Known Good Configuration	Boots XP with the Last Known Good Configuration (LKGC), the state of the Registry as it was recorded during the last successful user logon. After each successful boot sequence, Windows XP makes a copy of the current combination of driver/system settings and stores it as the Last Known Good Configuration.
Directory Services Restore Mode	Used only on Windows 2000 Server and Windows Server 2003 domain controllers.
Debugging Mode	Boots Windows XP normally but sends debugging information to another system over a serial cable. Details about using this option are included in the <i>Microsoft Windows XP Professional Resource Kit</i> .
Start Windows Normally	Starts Windows XP as it would normally start.
Reboot	Reboots the computer.
Return to OS Choices Menu	Returns you to the screen where you can select an operating system to load.

Advanced Options can be used to recover from a wide variety of system problems or failures. Safe Mode offers the ability to boot into a functioning system even when specific drivers are corrupted or failing. This includes

bypassing bad video drivers, network drivers and GUI controls by booting into Enable VGA Mode, Safe Mode (without networking support) and Safe Mode with Command Prompt, respectively. In most cases, this allows you to replace or remove the problematic driver before booting Windows normally.

If a problem is occurring and you can't find its exact cause or nature, you might want to choose Enable Boot Logging to record the process of steps performed between the boot menu and the logon prompt. The file that's produced, called %systemroot%\Ntbtlog.txt, can provide clues as to the driver, system or procedure that is causing the system malfunction.

If you've recently installed a driver or entire software product or just modified the Registry and the result is a system that does not fully boot, the Last Known Good Configuration is a great first step in returning the system to a functional state.

Last Known Good returns the system to the state of the Registry at the time of the last successful logon. However, if you log on to the system again while the bad driver or configuration is still active, the current system state when you log on will overwrite the Last Known Good configuration.

You must use the Last Known Good immediately before logging back on to the system.

Do it!

A-1: Booting using the Advanced Options menu

Here's how

- 1 Shut Down your computer, and then turn it back on again. When prompted, press F8. Boot into Safe Mode using the Windows XP Professional menu choice. Click yes once the computer has booted to work in Safe Mode
- 2 How can you tell you're in Safe Mode?
- 3 Choose Start, Run and type **cmd** and press Enter
- 4 At the command prompt in the window that has opened, try typing **Ping Localhost** and press Enter. Then try typing **ipconfig** and press Enter. What happens when you do this?
- 5 Shut Down your computer, and then turn it back on again. When prompted, press F8. Boot into Safe Mode with Networking using the Windows XP Professional menu choice. Click yes once the computer has booted to work in Safe Mode with Networking.
6. At the command prompt in the window that has opened try typing **Ping Localhost** and press Enter, then try typing **ipconfig** and press Enter. What happens this time that is different?
7. Shut down your computer. Restart the computer and enter the Advanced Options menu when you press F8. Enable boot logging. After the computer reboots, open C:\Windows\Ntbtlog.txt. What kind of information does it contain?

Boot Configuration and Operating System Selection

Explanation

The Windows XP boot configuration can be controlled through its configuration file, Boot.ini. Boot.ini is located in the root directory of the system partition and is used by the boot loader to display the list of available operating systems. This file consists of two sections: [boot loader] and [operating systems]. An example of a Boot.ini file is shown in Exhibit 2-1.

```

boot - Notepad
File Edit Format View Help
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft windows XP
Professional" /fastdetect /NOexecute=OptIn
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Microsoft windows XP
Professional" /fastdetect

```

Exhibit 2-1: A sample Boot.ini file

The [Boot Loader] Section

The [boot loader] section of the Boot.ini file contains two items: timeout and default. The timeout setting defines the number of seconds the system waits for the user to select an operating system before loading the default operating system. If timeout is set to zero, Ntldr immediately loads the default operating system without displaying the boot loader screen. To cause the system to wait indefinitely for a selection, set the timeout to -1. This setting, however, can only be altered by using a text editor, because it is an illegal value for the setting from the System applet in Control Panel. The default setting in Boot.ini lists the path to the default operating system.

The [Operating Systems] Section

The [operating systems] section of Boot.ini lists the available operating systems. Each listing contains the path to the boot partition for the operating system, the text displayed in the boot loader screen and optional parameters.

The following table details some of the switches that can be added to the end of entries in the [operating systems] section of Boot.ini. In most cases, you want to employ the F8 Windows Advanced Options Menu to access troubleshooting boot methods. However, you can employ the following switches and switch combinations to mimic the Windows Advanced Options Menu selections in your Boot.ini file. The switches used in the Boot.ini file are not case sensitive.

Switch	Description
/BASEVIDEO	Starts Windows XP in standard VGA mode (640 x 480) with 16 colours.
/BAUDRATE=n	Sets the baud rate for the serial connection used in kernel debugging (the default is 9600; a setting of up to 115,200 can be used).
/BOOTLOG	Enables boot logging.
/CRASHDEBUG	Loads the kernel debugger but remains inactive until a STOP error occurs.
/DEBUG	Loads the debugger and allows access by a host debugger connected to the computer.
/DEBUGPORT={com1 com2 1394}	Sets the port for debugging.
/FASTDETECT={com1 com2 . . .}	Specifies a serial port to skip during boot-up hardware scanning; if no com port is specified, all ports are skipped. This switch is included in every entry in the Boot.ini file by default.
/MAXMEM=n	Sets the maximum amount of RAM the operating system can consume.
/NOGUIBOOT	Boots without showing the splash screen; does not determine whether Windows XP GUI environment or command prompt is booted.
/NODEBUG	Disables the debugger.
/NUMPROC=n	Sets the number of processors on a multiprocessor system the operating system is allowed to use.
/SAFEBOOT:MINIMAL	Boots into Safe Mode.
/SAFEBOOT:NETWORK	Boots into Safe Mode with Networking.
/SAFEBOOT:MINIMAL(ALTERNATESHELL)	Boots into Safe Mode with Command Prompt.
/SOS	Displays the device driver names when they are loaded.

Editing Boot.ini Using the Windows XP GUI

You might need to make changes to the Boot.ini files in business situations such as when creating multi-boot systems or reconfiguring a system to boot from a mirror after the original source drive fails.

To make changes to a Boot.ini file, you have a few options, including using the Windows XP GUI to edit this file indirectly or using a text editor to edit the file directly.

To use the Windows XP GUI, right-click on My Computer and choose Properties. Activate the Advanced tab and under Startup and Recovery, click Settings. You can use the Startup and Recovery dialog box to choose a default boot selection and to select a delay interval before the boot selection starts automatically. This delay time corresponds to the timeout value set in Boot.ini.

You can also configure the options that control debugging output for system failures appearing in this dialog box; this information often comes in handy when severe problems occur.

Do it!

A-2: Editing Boot.ini using the Windows XP GUI

Here's how	Here's why
1 Click Start , right-click My Computer and choose Properties	To open the System Properties dialog box.
2 Activate the Advanced tab	
3 Under Startup and Recovery, click Settings	To open the Startup and Recovery dialog box.
4 Next to Time to display list of operating systems, change the time to 15 seconds	To change the time that the boot loader menu will be displayed to 15 seconds.
5 Click OK twice	To close open dialog boxes.

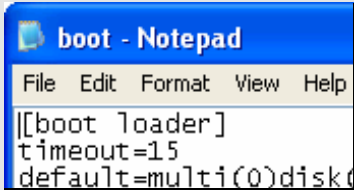
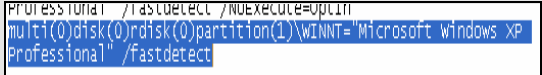
Editing Boot.ini Using Notepad

Explanation

You can use Notepad or any other text editor to edit Boot.ini.. As with any initialisation file, you should be careful when editing the file. If you configure the file incorrectly, Windows XP might not boot. You should always create a backup copy of the file and name it Boot.bak before you make any changes.

Do it!

A-3: Editing Boot.ini using Notepad

Here's how	Here's why
1 Open My Computer and display the C drive	
2 Copy Boot.ini to the desktop and rename the file Boot.bak	To make a backup copy of the file.
Click Yes	To confirm you want to rename the file.
3 Right-click Boot.ini and choose Properties	To open the Properties dialog box.
Uncheck Read-only and click OK	To be able to edit the file.
4 In the C drive, right-click Boot.ini and choose Open With	
5 Verify that Notepad is selected and click OK	
6 Observe the timeout value	 <p>Notice that it's now set to 15.</p>
7 Under [operating systems], select the line that points to the Windows XP installation in the Winnt folder	 <p>This was the installation you upgraded from Windows 2000 Professional.</p>
8 Press Delete	To delete the line
9 Save the file in Notepad and close it and close My Computer	
10 Right-click My Computer and choose Properties	
11 On the Advanced tab, under Startup and Recovery, click Settings	
12 Display the Default Operating System list	You should see that there's only one Windows XP installation listed
13 Click Cancel twice	To close all open dialog boxes.

MS-DOS Startup Disks


Explanation

You may discover that in order to troubleshoot some problems with Windows XP, you have to boot to DOS by using an *MS-DOS startup disk*. For Windows XP systems that use only or mostly FAT partitions, an MS-DOS startup disk will be extremely useful. By booting from an MS-DOS startup disk, any file on a FAT partition can be edited, replaced, moved, copied, deleted, renamed and so on. However, if a system uses NTFS partitions, then the MS-DOS startup disk will be of little use since NTFS partitions cannot be accessed from an MS-DOS environment.

Note: While it is true for the purpose of Microsoft exams that you can't access an NTFS partition from MS-DOS, there's a tool named NTFSDOS that you can use to boot from an MS-DOS startup disk and access the contents of NTFS partitions. There is even a version of this tool available that allows you to edit, alter, rename and delete files on NTFS partitions from DOS.

Do it!

A-4: Creating an MS-DOS startup disk

Here's how	Here's why
1 Insert a blank, formatted floppy disk into the floppy drive on your computer	
2 Open My Computer	
3 Right-click the floppy drive and choose Format	
4 In the Format dialog box, check Create an MS-DOS startup disk	
5 Click Start and click OK	
6 When the process is complete, click OK	
7 Click Close	
8 Close My Computer and restart your computer	To test the new MS-DOS startup disk.
9 Verify that the computer boots to the floppy disk	You should see an A prompt.
10 At the A prompt, enter c:	
11 At the C prompt, enter dir	

<p>12 Observe the contents of the C drive</p>	<p>You should see the Windows directory that holds the operating system files. The MS-DOS startup disks lets you access the hard disk and its files without booting to Windows XP.</p>
<p>13 Remove the floppy disk, restart your computer and boot into Windows XP</p> <p>Log on as Administrator</p>	

Recovery Console

Explanation

The Windows XP *Recovery Console* gives more precise control over the troubleshooting and repair process. If you know which services or drivers might be causing the problem, instead of running the PC in Safe Mode, you can simply use the Recovery Console to disable or reconfigure those specific services or drivers.

Some examples of how you can use Recovery Console include:

- If a device driver is corrupted but you are unable to boot into the GUI, you can use the Recovery Console to replace the corrupted file with a new version off a floppy disk.
- If your Boot.ini file is damaged, you can re-create it using the bootcfg /rebuild command.
- If a service is causing a system lockup, you can disable it using the disable command.
- If your system drive no longer allows booting, you can repair the boot section using the fixboot command. You can also use the Recovery Console to repair a corrupted Master Boot Record, to copy needed files between your PC's hard drive and removable media such as a floppy disk, CD-ROM or even a network share or you can format a partition.

You can access the Recovery Console in one of two ways:

- From a command prompt, change directories to the i386 folder on the Windows XP CD-ROM. Run winnt32.exe /cmdcons to install the Recovery Console. When you restart your machine, you'll notice a new option for starting Windows XP Professional with the Recovery Console.
- Use the Windows XP CD-ROM or startup disks to start your computer. Select the Recovery Console option when you are prompted to choose repair options.

In either case, in order to use the Recovery Console, you must know the local system administrator's password.

If you have installed a service pack, you won't be able to install Recovery Console from the original Windows XP installation CD-ROM. You'll have to install Recovery Console before you install the service pack or you'll need to slipstream the service pack files into a folder on a server with the

Windows XP installation files and install Recovery Console using those files.

Startup Troubleshooting

One of the first steps in startup troubleshooting is to determine whether the problem occurs before startup begins, during the startup process or after the operating system has been launched (just before user logon or just as the logon prompt or Welcome screen is displayed).

Here are general troubleshooting tips you can employ to assist you in resolving startup issues:

- Use the Last Known Good Configuration boot option. This is only possible if you have not already logged on again after the problem was discovered.
- Boot into Safe Mode. If this is not possible, try Recovery Console.
- Uninstall or remove the suspect component (for example, a service, driver or application).
- Use a System Restore point if available.
- Use the Recovery Console.
- Verify the Boot.ini configuration and the presence of required system files.
- Install a second instance of the operating system onto a different partition. Use the second operating system to restore files from backup into the primary instance of the operating system.
- Use Automated System Recovery (ASR) to restore the entire system from a full backup.
- Perform an upgrade install.
- Perform a clean install. Re-install all applications. Re-configure the environment. Restore data files from backup.