Cram Guide for Exam 220-302 A+ OS Technologies Hardware

Domain 1 Operating System Fundamentals

Identify the major desktop components and interfaces, and their functions. Differentiate the characteristics of Windows 9x/Me, Windows NT 4.0 Workstation, Windows 2000 Professional, and Windows XP.

1. Virtual memory means swap file. The default is that the OS will manage it dynamically. You may manually set its size though. Recommended size is 1.5 times the size of the physical RAM installed.
2. Registry can be edited through Registry Editor, NOT text editor. Once the registry is edited, you need to reboot the system for the changes to take effect.
3. 98/ME is ideal for home entertainment use, while NT, 2000 and XP are more ideal for office clients (they are more reliable and secure).

Identify the names, locations, purposes, and contents of major system files.

4. IO.SYS is an executable file which processes instruction to tell the operating system about how the computer is set up. WinNT, 2K and XP do not need this file.
5. Win.com is the executable file responsible for Windows start-up. Its launch is automated since Win95. WinNT, 2K and XP do not need this file.
6. AUTOEXEC.BAT is a file containing commands that can be executed when the computer is started. WinNT, 2K and XP do not need this file.
7. CONFIG.SYS is a text file that allows you to specify memory device driver and programs that control hardware devices as well as to enable or disable system features. WinNT, 2K and XP do not need this file.
8. WIN.INI is a text based file where a user's customization changes are stored. SYSTEM.INI is a text based file where the system settings are stored. WinNT, 2K and XP do not need these 2 files.
9. Boot.ini is the text based boot initialization file in WinNT, 2K and XP and lets you specify how and via which installed OS the computer is to boot with. It is flagged as a read-only system file by default.

Demonstrate the ability to use command-line functions and utilities to manage the operating system, including the proper syntax and switches.

10. When you start your computer successfully, Scanreg.exe creates a backup of system files (such as System.dat, User.dat, System.ini, and Win.ini) and registry configuration information. It automatically scans the system registry for invalid entries and empty data blocks when it is started. If invalid registry entries are found, it automatically restores a previous day's backup.
11. You can use the Defrag.exe to increase the speed of programs on your computer by reorganizing the files on your hard disk into contiguous blocks.
12. You can use Scandisk.exe to check the integrity of your media and repair any problems found. It also runs automatically when the operating system is shut down improperly or your disk contains a critical error.

Identify basic concepts and procedures for creating, viewing, and managing disks, directories and files.

13. FAT32 is supported by Windows 9x/Me, Windows NT 4.0, Windows 2000, and Windows XP. NTFS is only supported by Windows NT 4.0, Windows 2000 and Windows XP.
14. NTFS allows security permission settings and data compression, while FAT32 has nothing but with less overhead.
15. W2K and XP use an enhanced version of NTFS which allows disk usage quota management.
16. You can convert FAT32 to NTFS via convert.exe, but NOT vice versa.
17. You navigate through files and directories using My Computer or Windows Explorer.

Identify the major operating system utilities, their purpose, location, and available switches.

18. MSCONFIG for Windows 98/ME allows you to edit configuration files via check box menu.
19. REGEDIT.EXE allows you to open and use the Registry editor utility.
20. WINIPCFG.EXE allows you to review and configure TCP/IP settings in 98/ME.
21. IPCONFIG.EXE allows you to review and configure TCP/IP settings in NT/2K/XP.
22. Fdisk allows you to configure disk partitions. It has an undocumented parameter called /mbr that causes it to write the master boot record to the hard disk without altering the partition table information.

Domain 2 Installation, Configuration and Upgrading

Identify the procedures for installing Windows 9x/Me, Windows NT 4.0 Workstation, Windows 2000 Professional, and Windows XP, and bringing the operating system to a basic operational level.

23. The easiest way is to boot directly from the CD and start installation.
24. Win9x is the directory that holds the source files for 98/ME on the CD.
25. i386 is the directory that holds the source files for NT/2K/XP on the CD.
26. Setup.exe starts installation of 98/ME.
27. Winnt.exe starts installation of NT/2K/XP.

Identify steps to perform an operating system upgrade from Windows 9.x/ME, Windows NT 4.0 Workstation, Windows 2000 Professional, and Windows XP.

28. The Windows Hardware Compatibility List (HCL) contains a list of computer systems and peripherals that are fully compatible with Windows. The HCL can be found on the Microsoft Windows Hardware Quality Labs Web site.
29. Before you plan an upgrade, always check the HCL first.
30. If you plan to upgrade to W2K or XP, you may run winnt32.exe.

Identify the basic system boot sequences and boot methods, including the steps to create an emergency boot disk with utilities installed for Windows 9x/Me, Windows NT 4.0 Workstation, Windows 2000 Professional, and Windows XP.

31. If you want to dual boot between 98/ME and NT/2K/XP, install 98/ME FIRST and maintain the file system as FAT32.
32. From 98/ME you can create a boot floppy which allows you to boot to DOS.
33. On 2000/XP, you may create an Emergency Repair disk: Click Start, point to Programs, point to Accessories, point to System Tools, and then click Backup. On the Tools menu, click Create an Emergency Repair Disk.
34. A On NT/2000/XP, you may create an Emergency Repair disk manually by copying the contents of the \%Systemroot%\Repair folder to the root of a formatted floppy disk.
35. Safe mode allows you to boot the system with minimal functionalities loaded. VGA mode allows you to boot into the standard 16 color low resolution mode.
36. Last Known Good Configuration allows you to boot using the last set of flawless system configurations. It is not available in 98/ME.

Identify procedures for installing/adding a device, including loading, adding, and configuring device drivers, and required software.

37. NT is not plug and play compatible. 98 has limited plug and play support. They may need manual configuration of new hardware.
38. ME/2K and XP are fully plug and play compatible, meaning the system will automatically detect the drivers for the newly added hardware.
39. In order to assure users that they are using the highest-quality drivers, Microsoft digitally signs drivers that pass the Windows Hardware Quality Lab (WHQL) tests. Driver signing is supported on 2000/XP.

Identify procedures necessary to optimize the operating system and major operating system subsystems.

40. To optimize OS performance, remove any unnecessary programs. Stop any unnecessary background services.
41. For NT/2K/XP, you need to choose either to optimize for background services or foreground applications.
42. NT/2K/XP has the Performance Monitor utility for measuring and monitoring system performance.
43. More physical RAM is always better – 2000/XP are always hungry for memory.
44. For faster disk performance, defrag the disks regularly.

Domain 3 Diagnosing and Troubleshooting

Recognize and interpret the meaning of common error codes and startup messages from the boot sequence, and identify steps to correct the problems.

45. If the computer cannot even show the BIOS boot up sequence, chance is that there is a hardware failure.

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46. The most common types of error come from missing or corrupted system files. In that case you may need to boot from a boot floppy and run scandisk to check for disk errors.
47. The OS may fail to boot after a new hardware driver is installed. If that is the case, use Last Known Good Configuration OR boot into safe mode and remove the driver.
48. Windows Protection Error Messages can occur when your computer loads or unloads a virtual device driver (VxD). Most of the time the VxD that did not load or unload is mentioned in the error message.
49. NT/2K/XP's event logs can get full and stop working. You need to regularly check and empty them.
50. Dr Watson reports application error in NT.

Recognize when to use common diagnostic utilities and tools.

51. For registry related problems, use scanreg.
52. For disk related problems, use scandisk.
53. For network related problems, use ipconfig / winipcfg and ping.
54. Winmsd.exe is the standard Windows NT Diagnostics tool included with Windows NT. Microsoft System Information (Msinfo32.exe) is a relatively more advanced tool for gathering system configuration information and help engineers determine information that could indicate problems with the system.
55. To recover your operating system when your computer does not start correctly or does not start at all, you may want to install and use the Windows Recovery console. Do note that the Recovery Console should be used only after Safe mode and other startup options do not work. You must be an advanced user who can use basic commands to identify and locate problem drivers and files in order to use it.

Recognize common operational and usability problems and determine how to resolve them.

56. The most common type of problems associated with printing is that the print spooler is stalled. In this case, you want to stop the print spooler, optionally empty the queue, and restart it.
57. Beware of printer driver problem - printing of a bunch of codes and symbols is usually the result of incorrect printer driver.
58. System blue screen error is usually a driver problem or a hardware problem.
59. Illegal operation is usually a result of application error.
60. If your network connectivity suddenly fails, check the cables and also the LED on the NIC.
61. Boot Sector Virus attaches itself to the boot sector of a floppy disk or an executable file and copies all or part of itself onto the boot sector of your hard drive. File-Infecting Virus attaches themselves to executable files associated with other programs. Macro Virus affects the Microsoft Word and Excel templates. The Windows OS by itself does not include anti-virus facilities.

Domain 4 Networks

Identify the networking capabilities of Windows. Given configuration parameters, configure the operating system to connect to a network.

62. You can install multiple NICs on a computer.
63. You may bind multiple protocols onto a NIC, but for performance purpose you should only install the needed protocols.
64. IPX/SPX is for communicating with older Netware systems. Appletalk is for communicating with Macs.
65. DNS and WINS are for name resolution. You use NSlookup to troubleshoot DNS naming problems.
66. DHCP is for dynamic IP address allocation. You must be on the same subnet as the DHCP server in order to receive configuration settings.

Identify the basic Internet protocols and terminologies. Identify procedures for establishing Internet connectivity. In a given scenario, configure the operating system to connect to and use Internet resources.

67. An Internet Service Provider (ISP) is a company that provides access to the Internet. You may connect to the ISP through dial up networking (modem and phone line) or through broadband connections (via the LAN card interface).
68. Internet Connection Sharing (ICS) allows multiple computers to share one internet connections.
69. The commonly identified protocols include POP, SMTP and IMAP (for emails), HTTP and HTTPS (for web page viewing), SSL (for eCommerce transaction), Telnet (for remote logon and operations) and FTP (file upload or download).
70. You may use the Internet Connection Firewall (ICF) on WinXP to protect a dial-up connection when dialing directly into an ISP, or to protect a LAN connection that is connected to an asymmetric digital subscriber line (ADSL) or cable modem. You may also enable ICF on the Internet connection of an ICS host computer to provide protection to the ICS host computer.
71. W2K computers may perform basic security through TCP/IP filters. 98/ME have no protection at all.

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