

A+ Operating System Technologies Examination Objectives

6/20/02

Introduction

For A+ Certification, the examinee must pass both this examination and the A+ Core Hardware examination. This examination measures essential operating system competencies for desktop computer hardware service technician with six months of on-the-job experience. The examinee must demonstrate basic knowledge of Command Line Prompt, Windows 9x and Windows 2000 for installing, configuring, upgrading, troubleshooting, and repairing desktop computer systems.

The skills and knowledge measured by this examination are derived from an industry-level and worldwide job task analysis which was validated through a survey of almost 2,000 A+ certified professionals. The results of the survey are used in weighting the domains and ensuring that the weighting is representative of the relative importance of that content to the job requirements of a service technician with six months on-the-job experience. The intent is to certify individuals in a body of knowledge that is identified and accepted as the baseline or foundation of an entry-level PC technician. It is not intended to measure 'cutting edge' technologies.

The results of the job task analysis and survey can be found in the following report: CompTIA A+ Certification Core Hardware and OS Technologies examinations Job Task Analysis Report. This report is available for distribution.

The exam is in adaptive format, therefore, will be presented with 20-30 questions. You will have 30 minutes to complete the exam. Please be aware that a score determination could be made before the maximum number of questions is presented. Once a score determination is made, the exam will shut off. The exam is translated in the following languages: Japanese, French, Spanish and German.

NOTE: This examination blueprint for the A+ Operating System Technologies examination includes the weighting, test objectives, and example content. Example topics and concepts are included to clarify the test objectives and should not be construed as a comprehensive listing of all the content of this examination.

The table below lists the domains measured by this examination and the extent to which they are represented.

Domain	% Of Examination
1.0 OS Fundamentals	30%
2.0 Installation, Configuration and Upgrading	15%
3.0 Diagnosing and Troubleshooting	40%
4.0 Networks	15%
Total	100.00%

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Response Limits

The examinee selects, from four (4) or more response options and the option(s) that best completes the statement or answers the question. Distracters or wrong answers are response options that examinees with incomplete knowledge or skill would likely choose, but are generally plausible responses fitting into the content area. Test item formats used in this examination are:

Multiple-choice: The examinee selects one option that best answers the question or completes a statement. The option can be embedded in a graphic where the examinee “points and clicks” on their selection choice to complete the test item.

Multiple-response: The examinee selects more than one option that best answers the question or completes a statement.

Sample Directions:

Read the statement or question and from the response options, select only the option(s) that represent the most correct or best answer(s).

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Domain 1.0 Operating System Fundamentals

This domain requires knowledge of underlying DOS (Command prompt functions) in Windows 9x, Windows 2000 operating systems in terms of its functions and structure, for managing files and directories, and running programs. It also includes navigating through the operating system from command line prompts and Windows procedures for accessing and retrieving information.

Content Limits

1.1 Identify the operating system's functions, structure, and major system files to navigate the operating system and how to get to needed technical information.

Content may include the following:

- o Major Operating System functions
 - o Create folders
 - o Checking OS Version
- o Major Operating System components
 - o Explorer
 - o My Computer
 - o Control Panel
- o Contrasts between Windows 9X and Windows 2000
- o Major system files: what they are, where they are located, how they are used and what they contain:
 - System, Configuration, and User Interface files
 - o IO.SYS
 - o BOOT.INI
 - o WIN.COM
 - o MSDOS.SYS
 - o AUTOEXEC.BAT
 - o CONFIG.SYS
 - o COMMAND LINE PROMPT
 - Memory management
 - o Conventional
 - o Extended/upper memory
 - o High memory
 - o Virtual memory
 - o HIMEM.SYS
 - o EMM386.exe

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Windows 9x

- IO.SYS
- WIN.INI
- USER.DAT
- SYSEDIT
- SYSTEM.INI
- SETVER.EXE
- SMARTDRV.EXE
- MSCONFIG (98)
- COMMAND.COM
- DOSSTART.BAT
- REGEDIT.EXE
- SYSTEM.DAT
- RUN COMMAND
- DriveSpace

Windows 2000

- Computer Management
- BOOT.INI
- REGEDT32
- REGEDIT
- RUN CMD
- NTLDR
- NTDETECT.COM
- NTBOOTDD.SYS

Command Prompt Procedures (Command syntax)

- DIR
- ATTRIB
- VER
- MEM
- SCANDISK
- DEFRAG
- EDIT
- XCOPY
- COPY
- FORMAT
- FDISK
- MSCDEX
- SETVER
- SCANREG

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- 1.2 Identify basic concepts and procedures for creating, viewing and managing files, directories and disks. This includes procedures for changing file attributes and the ramifications of those changes (for example, security issues).**

Content may include the following:

- o File attributes - Read Only, Hidden, System, and Archive attributes
- o File naming conventions (Most common extensions)
- o Windows 2000 COMPRESS, ENCRYPT
- o IDE/SCSI
- o Internal/External
- o Backup/Restore
- o Partitioning/Formatting/File System
 - o FAT
 - o FAT16
 - o FAT32
 - o NTFS4
 - o NTFS5
 - o HPFS
- o Windows-based utilities
 - o ScanDisk
 - o Device manager
 - o System Manager
 - o Computer Manager
 - o MSCONFIG.EXE
 - o REGEDIT.EXE (View information/Backup registry)
 - o REGEDT32.EXE
 - o ATTRIB.EXE
 - o EXTRACT.EXE
 - o DEFRAG.EXE
 - o EDIT.COM
 - o FDISK.EXE
 - o SYSEDIT.EXE
 - o SCANREG
 - o WSCRIPT.EXE
 - o HWINFO.EXE
 - o ASD.EXE (Automatic Skip Driver)
 - o Cvt1.EXE (Drive Converter FAT16 to FAT32)

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Domain 2.0 Installation, Configuration and Upgrading

This domain requires knowledge of installing, configuring and upgrading Windows 9x, and Windows 2000. This includes knowledge of system boot sequences and minimum hardware requirements.

Content Limits

2.1 Identify the procedures for installing Windows 9x, and Windows 2000 for bringing the software to a basic operational level.

Content may include the following:

- o Start Up
- o Partition
- o Format drive
- o Loading drivers
- o Run appropriate set up utility

2.2 Identify steps to perform an operating system upgrade.

Content may include the following:

- o Upgrading Windows 95 to Windows 98
- o Upgrading from Windows NT Workstation 4.0 to Windows 2000
- o Replacing Windows 9x with Windows 2000
- o Dual boot Windows 9x/Windows NT 4.0/2000

2.3 Identify the basic system boot sequences and boot methods, including the steps to create an emergency boot disk with utilities installed for Windows 9x, Windows NT, and Windows 2000.

Content may include the following:

- o Startup disk
- o Safe Mode
- o MS-DOS mode
- o NTLDR (NT Loader), BOOT.INI
- o Files required to boot
- o Creating emergency repair disk (ERD)
- o

2.4 Identify procedures for loading/adding and configuring application device drivers, and the necessary software for certain devices.

Content may include the following:

- o Windows 9x Plug and Play and Windows 2000
- o Identify the procedures for installing and launching typical Windows and non-Windows applications. (Note: there is no content related to Windows 3.1)

- o Procedures for set up and configuring Windows printing subsystem.
 - o Setting Default printer
 - o Installing/Spool setting
 - o Network printing (with help of LAN admin)

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Domain 3.0 Diagnosing and Troubleshooting

This domain requires the ability to apply knowledge to diagnose and troubleshoot common problems relating to Windows 9x and Windows 2000. This includes understanding normal operation and symptoms relating to common problems.

Content Limits

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

Content may include the following:

- o Safe Mode
- o No operating system found
- o Error in CONFIG.SYS line XX
- o Bad or missing COMMAND.COM
- o HIMEM.SYS not loaded
- o Missing or corrupt HIMEM.SYS
- o SCSI
- o Swap file
- o NT boot issues
- o Dr. Watson
- o Failure to start GUI
- o Windows Protection Error
- o Event Viewer – Event log is full
- o A device referenced in SYSTEM.INI, WIN.INI, Registry is not found

3.2 Recognize common problems and determine how to resolve them.

Content may include the following:

- o Eliciting problem symptoms from customers
- o Having customer reproduce error as part of the diagnostic process
- o Identifying recent changes to the computer environment from the user
- o Troubleshooting Windows-specific printing problems
 - o Print spool is stalled
 - o Incorrect/incompatible driver for print
 - o Incorrect parameter
- o Other Common problems
 - o General Protection Faults
 - o Illegal operation
 - o Invalid working directory
 - o System lock up
 - o Option (Sound card, modem, input device) or will not function
 - o Application will not start or load
 - o Cannot log on to network (option – NIC not functioning)
 - o TSR (Terminate Stay Resident) programs and virus
 - o Applications don't install
 - o Network connection
- o Viruses and virus types
 - o What they are
 - o Sources (floppy, emails, etc.)
 - o How to determine presence

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Domain 4.0 Networks

This domain requires knowledge of network capabilities of Windows and how to connect to networks on the client side, including what the Internet is about, its capabilities, basic concepts relating to Internet access and generic procedures for system setup. The scope of this topic is only what is needed on the desktop side to connect to a network.

Content Limits

4.1 Identify the networking capabilities of Windows including procedures for connecting to the network.

Content may include the following:

- o Protocols
- o IPCONFIG.EXE
- o WINIPCFG.EXE
- o Sharing disk drives
- o Sharing print and file services
- o Network type and network card
- o Installing and Configuring browsers
- o Configure OS for network connection

4.2 Identify concepts and capabilities relating to the Internet and basic procedures for setting up a system for Internet access.

Content may include the following:

Concepts and terminology

- o ISP
- o TCP/IP
- o IPX/SPX
- o NetBEUI
- o E-mail
- o PING.EXE
- o HTML
- o HTTP://
- o FTP
- o Domain Names (Web sites)
- o Dial-up networking
- o TRACERT.EXE
- o NSLOOKUP.EXE