

A+ Certification Training

course outlines



Launch your career
in the IT Industry
today

This course will help you if:

- You want to gain a recognised IT qualification
- You'd like to achieve competency and knowledge of hardware and software operating systems
- You want to gain on-the-job experience
- You'd like to develop your professional career

A + Certification

This course will help you :

- Gain a recognised qualification within the IT Industry
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A+ Certification

Course duration:

The course is run in two sessions of 4 days. The first session being A+ Hardware and the second A+ Software. Evening or weekend courses are possible, yet these can only run if the request is high.

Who is it for?

The CompTIA A+ certification is the industry standard for validating vendor-neutral skills expected of an entry-level computer technician.

Those holding the A+ certification have a broad base of knowledge and competency in core hardware and operating system technologies including installation, configuration, diagnosing, preventive maintenance and basic networking.

How will it affect my career?

Every business uses computers and skilled technicians are a necessity. A+ opens the door to an exciting career in computer technology at an affordable price. A+ certification is the perfect launch pad into other more challenging careers in information technology. A+ Authorized Service Centers hire A+ certified employees because they know the job will get done right the first time and that saves them money. If you're A+ certified, you have a respected credential valued by the IT industry.



A+ Hardware exam objectives

For A+ certification, the examinee must pass both this exam and the A+ Operating System Technologies exam. The Core Hardware exam measures essential competencies for a desktop computer hardware service technician with six months of on-the-job experience. The examinee must demonstrate basic knowledge of installing, configuring, upgrading, troubleshooting, and repairing desktop computer systems at the standard defined by this test specification.

The skills and knowledge measured by this exam are derived from an industry-wide 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 any entry-level PC technician.

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

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

NOTE: This exam blueprint for the A+ Core Hardware exam 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 exam.

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

Domain	% of Exam
<u>1.0 Installation, Configuration and Upgrading</u>	30%
<u>2.0 Diagnosing and Troubleshooting</u>	30%
<u>3.0 Preventive Maintenance</u>	5%
<u>4.0 Motherboard/Processors/Memory</u>	15%
<u>5.0 Printers</u>	10%
<u>6.0 Basic Networking</u>	10%
	Total 100%

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 exam 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 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).

DOMAIN 1.0: Installation, Configuration and Upgrading

This domain requires the knowledge and skills to identify, install, configure, and upgrade desktop computer modules and peripherals, following established basic procedures for system assembly and disassembly of field replaceable modules. Elements included are listed below with each test objective.

Content Limits

1.1 Identify basic terms, concepts, and functions of system modules, including how each module should work during normal operation and during the boot process. Examples of concepts and modules are:

- System board
- Power supply
- Processor /CPU
- Memory
- Storage devices
- Monitor
- Modem
- Firmware
- BIOS
- CMOS
- LCD (portable systems)
- Ports
- PDA (Personal Digital Assistant)

1.2 Identify basic procedures for adding and removing field replaceable modules for both desktop and portable systems.

Examples of modules:	Portable system components
System board	AC adapter
Storage device	Digital camera
Power supply	DC controller
Processor/CPU	LCD panel
Memory	PC card
Input devices	Pointing devices
Hard drive	
Keyboard	
Video board	
Mouse	
Network Interface Card (NIC)	

1.3 Identify available IRQs, DMAs, and I/O addresses and procedures for device installation and configuration. Content may include the following:

- Standard IRQ settings
- Modems
- Floppy drive controllers
- Hard drive controllers
- USB ports
- Infrared ports
- Hexidecimal/Addresses

1.4 Identify common peripheral ports, associated cabling and their connectors.

Content may include the following:

Examples of types of connectors:

Cable types	B-9
Cable orientation	DB-25
Serial versus parallel	RJ-11
Pin connections	RJ-45
	BNC
	PS2/MINI-DIN
	USB
	IEEE 1394

1.5 Identify proper procedures for installing and configuring IDE/EIDE devices. Content may include the following:

- Master/Slave
- Devices per channel
- Primary/Secondary

1.6 Identify proper procedures for installing and configuring SCSI devices. Content may include the following:

- Address/Termination conflicts
- Cabling
 - Types (example: regular, wide, ultra-wide)
- Internal vs external
- Expansion slots, EISA, ISA, PCI
- Jumper block settings (binary equivalents)

1.7 Identify proper procedures for installing and configuring peripheral devices.

Content may include the following: Portables

Monitor/Video Card	Docking stations
Modem	PC cards
USB peripherals and hubs	Port replicators
IEEE 1284	Infrared devices
IEEE 1394	
External storage	

1.8 Identify hardware methods of upgrading system performance, procedures for replacing basic subsystem components, unique components and when to use them.

Content may include the following: Portable systems

Memory	Battery
Hard drives	Hard drive
CPU	Types I, II, III cards
Upgrading BIOS	Memory
When to upgrade BIOS	

DOMAIN 2.0: Diagnosing and Troubleshooting

This domain requires the ability to apply knowledge relating to diagnosing and troubleshooting common module problems and system malfunctions. This includes knowledge of the symptoms relating to common problems.

Content Limits

2.1 Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems. Content may include the following:

Processor/Memory
symptoms

Mouse

Sound Card/Audio

Floppy drive

Monitor/Video

Parallel ports

Motherboards

Hard drives

Modems

CD-ROM

BIOS

DVD

USB

CMOS

NIC

Slot covers

Power supply

POST audible/visual error
codes

Troubleshooting tools
(e.g., multimeter)

Keyboard

Large LBA, LBA

Peripherals

Cables

2.2 Identify basic troubleshooting procedures and how to elicit problem symptoms from customers. Content may include the following:

- Troubleshooting/isolation/problem determination procedures
- Determine whether hardware or software problem
- Gather information from user regarding:
 - Customer environment
 - Symptoms/Error codes
 - Situation when the problem occurred

DOMAIN 3.0: Preventive Maintenance

This domain requires the knowledge of safety and preventive maintenance. With regard to safety, it includes the potential hazards to personnel and equipment when working with lasers, high voltage equipment, ESD and items that require special disposal procedures that comply with environmental guidelines. With regard to preventive maintenance, this includes knowledge of preventive maintenance products, procedures, environmental hazards and precautions when working on desktop computer systems.

Content Limits

3.1 Identify the purpose of various types of preventive maintenance products and procedures and when to use them. Content may include the following:

- Liquid cleaning compounds
- Types of materials to clean contacts and connections
- Non-static vacuums (chassis, power supplies, fans)

3.2 Identify issues, procedures and devices for protection within the computing environment, including people, hardware and the surrounding workspace. Content may include the following:

- UPS (Uninterruptible Power Supply) and suppressors
- Determining the signs of power issues
- Proper methods of storage of components for future use
- Potential hazards and proper safety procedures relating Laser
 - High-voltage equipment
 - Power supply
 - CRT
- Special disposal procedures that comply with environmental guidelines
 - Batteries
 - CRTs
 - Toner kits/cartridges
 - Chemical solvents and cans

- MSDS (Material Safety Data Sheet)
- ESD (Electrostatic Discharge) precautions and procedures
 - What ESD can do, how it may be apparent or hidden
 - Common ESD protection devices
 - Situations that could present a danger or hazard

DOMAIN 4.0: Motherboard/Processors/Memory

This domain requires knowledge of specific terminology, facts, ways and means of dealing with classifications, categories and principles of motherboards, processors and memory in desktop computer systems.

4.1 Distinguish between the popular CPU chips in terms of their basic characteristics. Content may include the following:

- Popular CPU chips (Intel, AMD, Cyrix)
- Characteristics
- Physical size
- Voltage
- Speeds
- On board cache or not
- Sockets
- SEC (Single Edge Contact)

4.2 Identify the categories of RAM (Random Access Memory) terminology, their locations and physical characteristics. Content may include the following:

- Terminology:
 - EDO RAM (Extended Data Output RAM)
 - DRAM (Dynamic Random Access Memory)
 - SRAM (Static RAM)
 - RIMM (Rambus Inline Memory Module 184 Pin)
 - VRAM (Video RAM)
 - SDRAM (Synchronous Dynamic RAM)
 - WRAM (Windows Accelerator Card RAM)
- Locations and physical characteristics:
 - Memory bank
 - Memory chips (8-bit, 16-bit, and 32-bit)
 - SIMMS (Single In-line Memory Module)
 - DIMMS (Dual In-line Memory Module)
 - Parity chips versus non-parity chips

4.3 Identify the most popular type of motherboards, their components and architecture (bus structures and power supplies). Content may include the following:

- Types of motherboards:
 - AT (Full and Baby)
 - ATX
- Components:
 - Communication ports
 - SIMM and DIMM
 - Processor sockets
 - External cache memory (Level 2)
 - Bus Architecture
 - ISA
 - PCI
 - AGP
 - USB (Universal Serial Bus)
 - VESA local bus (VL-Bus)
 - Basic compatibility guidelines
 - IDE (ATA, ATAPI, ULTRA-DMA, EIDE)
 - SCSI (Wide, Fast, Ultra, LVD (Low Voltage Differential))

4.4 Identify the purpose of CMOS (Complementary Metal-Oxide Semiconductor), what it contains and how to change its basic parameters. Example basic CMOS settings:

- Printer parallel port — Uni., bi-directional, disable/enable, ECP, EPP
- COM/serial port — memory address, interrupt request, disable
- Floppy drive—enable/disable drive or boot, speed, density
- Hard drive — size and drive type
- Memory — parity, non-parity
- Boot sequence
- Date/Time
- Passwords
- Plug & Play BIOS

DOMAIN 5.0: Printers

This domain requires knowledge of basic types of printers, basic concepts, printer components, how they work, how they print onto a page, paper path, care and service techniques, and common problems.

Content Limits

5.1 Identify basic concepts, printer operations and printer components. Content may include the following:

- Paper feeder mechanisms
- Types of Printers
 - Laser
 - Inkjet
 - Dot Matrix
- Types of printer connections and configuration
 - Parallel
 - Network
 - USB
 - Infrared
 - Serial

5.2 Identify care and service techniques and common problems with primary printer types. Content may include the following:

- Feed and output
- Errors (printed or displayed)
- Paper jam
- Print quality
- Safety precautions
- Preventive maintenance

DOMAIN 6.0: Basic Networking

This domain requires knowledge of basic network concepts and terminology, ability to determine whether a computer is networked, knowledge of procedures for swapping and configuring network interface cards, and knowledge of the ramifications of repairs when a computer is networked. The scope of this topic is specific to hardware issues on the desktop and connecting it to a network.

Content Limits

6.1 Identify basic networking concepts, including how a network works and the ramifications of repairs on the network. Content may include the following:

- Installing and configuring network cards
- Network access
- Full-duplex, half-duplex
- Cabling—Twisted Pair, Coaxial, Fiber Optic, RS-232
- Ways to network a PC
- Physical Network topographies
- Increasing bandwidth
- Loss of data
- Network slowdown
- Infrared
- Hardware protocols

A+ Software exam objectives

Introduction

For A+ certification, the examinee must pass both this exam and the A+ Core Hardware exam. This exam 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 exam 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 exams Job Task Analysis Report. This report is available for distribution.

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

Domain	% of Exam
1.0 OS Fundamentals	30%
2.0 Installation, Configuration and Upgrading	15%
3.0 Diagnosing and Troubleshooting	40%
4.0 Networks	15%
Total	100%

Response Limits

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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).

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:

Major Operating System functions

Create folders

Checking OS Version

Major Operating System components

Explorer

My Computer

Control Panel

Contrasts between Windows 9X and Windows 2000

Major system files: what they are, where they are located, how they are used and what they contain:

System, Configuration, and User Interface files

IO.SYS

BOOT.INI

WIN.COM

MSDOS.SYS

AUTOEXEC.BAT

CONFIG.SYS

COMMAND LINE PROMPT

Memory management

Conventional

Extended/upper memory

High memory

Virtual memory

HIMEM.SYS

EMM386.exe

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

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:

File attributes - Read Only, Hidden, System, and
Archive attributes

File naming conventions (Most common extensions)

Windows 2000 COMPRESS, ENCRYPT

IDE/SCSI

Internal/External

Backup/Restore

Partitioning/Formatting/File System

FAT

FAT16

FAT32

NTFS4
NTFS5
HPFS
Windows-based utilities
ScanDisk
Device manager
System Manager
Computer Manager
MSCONFIG.EXE
REGEDIT.EXE (View information/Backup registry)
REGEDT32.EXE
ATTRIB.EXE
EXTRACT.EXE
DEFRAG.EXE
EDIT.COM
FDISK.EXE
SYSEDIT.EXE
SCANREG
WSCRIPT.EXE
HWINFO.EXE
ASD.EXE (Automatic Skip Driver)
Cvt1.EXE (Drive Converter FAT16 to FAT32)

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:

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

2.2 Identify steps to perform an operating system upgrade.

Content may include the following:

- Upgrading Windows 95 to Windows 98
- Upgrading from Windows NT Workstation 4.0 to Windows 2000
- Replacing Windows 9x with Windows 2000
- 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:

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

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

Content may include the following:

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

printing subsystem.

Setting Default printer

Installing/Spool setting

Network printing (with help of LAN admin)

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:

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

- Eliciting problem symptoms from customers
- Having customer reproduce error as part of the diagnostic process
- Identifying recent changes to the computer environment from the user
- Troubleshooting Windows-specific printing problems
- Print spool is stalled

Incorrect/incompatible driver for print

Incorrect parameter

Other Common problems

General Protection Faults

Illegal operation

Invalid working directory

System lock up

Option (Sound card, modem, input device) or will not function

Application will not start or load

Cannot log on to network (option – NIC not functioning)

TSR (Terminate Stay Resident) programs and virus

Applications don't install

Network connection

Viruses and virus types

What they are

Sources (floppy, emails, etc.)

How to determine presence

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:

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

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

AM:PM Services Booking Form

Please complete this form and mail or FAX to:
 AM:PM IT Services, Tower Point , 44 North Road, Brighton BN1 1YR.
 TEL: 01273 243000 FAX: 01273 243966
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Company & Address			
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Registration Fee £:		Total (excluding VAT): £	
Course Title:			
Candidate	Name	Course Title	Date

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