

NETWORK PROFESSIONAL PROGRAMME

COURSE OBJECTIVES



CompTIA A+

The CompTIA A+ prepares learners for the CompTIA A+ certification exams *Core Hardware* and *OS Technologies*.

Topics covered in this series include microprocessors, displays, storage media and devices, printers, modems, buses, operating systems, and more.

Gaining CompTIA A+ certification assures employers and computer owners that a PC repair technician has the requisite knowledge to build, upgrade, troubleshoot, and repair personal computer (PC) systems.

A+ Essentials (Exam Code 220-601) Course Objectives

The CompTIA A+ Essentials Examination measures necessary competencies for an entry-level IT professional with the equivalent knowledge of at least 500 hours of hands-on experience in the lab or field. Hands-on experience or equivalent knowledge includes installing, building, upgrading, repairing, configuring, troubleshooting, optimizing, diagnosing, and performing preventive maintenance of basic personal computer hardware and operating systems.

Domain Percentage of Examination

1.0	Personal Computer Components	21%
2.0	Laptop and Portable Devices	11%
3.0	Operating Systems	21%
4.0	Printers and Scanners	9%
5.0	Networks	12%
6.0	Security	11%
7.0	Safety and Environmental Issues	10%
8.0	Communication and Professionalism	5%
		100%

1.0 Personal Computer Components

- 1.1 Identify the fundamental principles of using personal computers. Identify the names, purposes and characteristics of storage devices.
- 1.2 Install, configure, optimize and upgrade personal computer components. Add, remove and configure internal and external storage devices.
- 1.3 Identify tools, diagnostic procedures and troubleshooting techniques for personal computer components.

- 1.4 Perform preventive maintenance on personal computer components Identify and apply basic aspects of preventive maintenance theory.

2.0 Laptops and Portable Devices

- 2.1 Identify the fundamental principles of using laptops and portable devices. Identify names, purposes and characteristics of laptop-specific hardware.
- 2.2 Install, configure, optimize and upgrade laptops and portable devices. Configure power management.
- 2.3 Identify tools, basic diagnostic procedures and troubleshooting techniques for laptops and portable devices. Use procedures and techniques to diagnose power conditions, video, keyboard, pointer and wireless card issues.
- 2.4 Perform preventive maintenance on laptops and portable devices. Identify and apply common preventive maintenance techniques for laptops and portable devices, for example: cooling devices, hardware and video cleaning materials, operating environments including temperature and air quality, storage, transportation and shipping.

3.0 Operating Systems

(Unless otherwise noted, operating systems referred to within include Microsoft Windows 2000, XP Professional, XP Home and Media Center.)

- 3.1 Identify the fundamentals of using operating systems. Identify differences between operating systems (e.g. Mac, Windows, and Linux) and describe operating system revision levels including GUI, system requirements, application and hardware compatibility. Identify names, purposes and characteristics of the primary operating system components including registry, virtual memory and file system. Describe features of operating system interfaces.
- 3.2 Install, configure, optimize and upgrade operating systems – references to upgrading from Windows 95 and NT may be made. Identify procedures for installing operating systems.
- 3.3 Identify tools, diagnostic procedures and troubleshooting techniques for operating systems. Identify basic boot sequences, methods and utilities for recovering operating systems
- 3.4 Perform preventive maintenance on operating systems. Describe common utilities for performing preventive maintenance on operating systems for example, software and Windows updates (e.g. service packs), scheduled backups / restore, restore points

4.0 Printers and Scanners

- 4.1 Identify the fundamental principles of using printers and scanners. Identify differences between types of printer and scanner technologies (e.g. laser, inkjet, thermal, solid ink, impact). Identify names, purposes and

- characteristics of printer and scanner components (e.g. memory, driver, firmware) and consumables (e.g. toner, ink cartridge, paper). Identify the names, purposes and characteristics of interfaces used by printers and scanners including port and cable types.
- 4.2 Identify basic concepts of installing, configuring, optimizing and upgrading printers and scanners. Install and configure printers / scanners.
 - 4.3 Identify tools, basic diagnostic procedures and troubleshooting techniques for printers and scanners. Gather information about printer / scanner problems.

5.0 Networks

- 5.1 Identify the fundamental principles of networks. Describe basic networking concepts
- 5.2 Install, configure, optimize and upgrade networks. Install and configure network cards (physical address). Install, identify and obtain wired and wireless connection
- 5.3 Identify tools, diagnostic procedures and troubleshooting techniques for networks. Explain status indicators, for example speed, connection and activity lights and wireless signal strength.

6.0 Security

- 6.1 Identify the fundamental principles of security. Identify names, purposes and characteristics of hardware and software security.
- 6.2 Install, configure, upgrade and optimize security. Install, configure, upgrade and optimize hardware, software and data security.
- 6.3 Identify tool, diagnostic procedures and troubleshooting techniques for security. Diagnose and troubleshoot hardware, software and data security issues.
- 6.4 Perform preventive maintenance for computer security. Implement software security preventive maintenance techniques such as installing service packs and patches and training users about malicious software prevention technologies.

7.0 Safety and Environmental Issues

- 7.1 Describe the aspects and importance of safety and environmental issues. Identify potential safety hazards and take preventive action. Use Material Safety Data Sheets (MSDS) or equivalent documentation and appropriate equipment documentation. Use appropriate repair tools. Describe methods to handle environmental and human (e.g. electrical, chemical, physical) accidents including incident reporting.
- 7.2 Identify potential hazards and implement proper safety procedures including ESD precautions and procedures, safe work environment and equipment handling.

- 7.3 Identify proper disposal procedures for batteries, display devices and chemical solvents and cans.

8.0 Communication and Professionalism

- 8.1 Enable good communication skills including listening and tact / discretion, when communicating with customers and colleagues. Use of clear, concise and direct statements. Clarifying customer statements. Avoidance of jargon, abbreviations and acronyms.
- 8.2 Use of job-related professional behaviour including notation of privacy, confidentiality and respect for the customer and customers' property.

A+ IT Technician (Exam Code 220-602) Course Objectives

The CompTIA A+ 220-602 exam is targeted for individuals who work or intend to work in a mobile or corporate technical environment with a high level of face-to-face client interaction. Job titles in some organizations which are descriptive of the role of this individual may be: Enterprise technician, IT administrator, field service technician, PC technician, etc. Ideally, the CompTIA A+ 220-602 candidate has already passed the CompTIA A+ Essentials examination.

Individuals in some non-technical roles such as student, sales personnel or small business office managers may also find the validation of skills associated with the CompTIA A+ credential to be valuable.

Domain Percentage of Examination

1.0	Personal Computer Components	18%
2.0	Laptop and Portable Devices	9%
3.0	Operating Systems	20%
4.0	Printers and Scanners	14%
5.0	Networks	11%
6.0	Security	8%
7.0	Safety and Environmental Issues	5%
8.0	Communication and Professionalism	15%
		100%

1.0 Personal Computer Components

- 1.1 Install, configure, optimize and upgrade personal computer components. Add, remove and configure personal computer components including selection and installation of appropriate components.
- 1.2 Identify tools, diagnostic procedures and troubleshooting techniques for personal computer components. Identify and apply basic diagnostic procedures and troubleshooting techniques.
- 1.3 Perform preventive maintenance of personal computer components. Identify and apply common preventive maintenance techniques for personal computer components.

2.0 Laptops and Portable Devices

- 2.1 Identify fundamental principles of using laptops and portable devices. Identify appropriate applications for laptop-specific communication connections such as Bluetooth, infrared, cellular WAN and Ethernet. Identify appropriate laptop-specific power and electrical input devices and determine

- how amperage and voltage can affect performance. Identify the major components of the LCD including inverter, screen and video card.
- 2.2 Install, configure, optimize and upgrade laptops and portable devices. Remove laptop-specific hardware such as peripherals, hot-swappable and non-hot-swappable devices. Describe how video sharing affects memory upgrades.
 - 2.3 Use tools, diagnostic procedures and troubleshooting techniques for laptops and portable devices. Use procedures and techniques to diagnose power conditions, video, keyboard, pointer and wireless card issues.

3.0 Operating Systems

(Unless otherwise noted, operating systems referred with within include Microsoft Windows 2000, XP Professional, XP Home and Media Center.)

- 3.1 Identify the fundamental principles of operating systems. Use command-line functions and utilities to manage operating systems, including proper syntax and switches.
- 3.2 Install, configure, optimize and upgrade operating systems – references to upgrading from Windows 95 and NT may be made. Identify procedures and utilities used to optimize operating systems.
- 3.3 Identify tools, diagnostic procedures and troubleshooting techniques for operating systems. Demonstrate the ability to recover operating systems (e.g. boot methods, recovery console, ASR, ERD). Recognize and resolve common operational problems.
- 3.4 Perform preventive maintenance for operating systems. Demonstrate the ability to perform preventive maintenance on operating systems including software and Windows updates (e.g. service packs), scheduled backups / restore, restore points.

4.0 Printers and Scanners

- 4.1 Identify the fundamental principles of using printers and scanners. Describe processes used by printers and scanners including laser, ink dispersion, thermal, solid ink and impact printers and scanners.
- 4.2 Install, configure, optimize and upgrade printers and scanners. Install and configure printers / scanners.
- 4.3 Identify tools and diagnostic procedures to troubleshooting printers and scanners. Gather information about printer / scanner problems. Review and analyze collected data. Isolate and resolve identified printer / scanner problem including defining the cause, applying the fix and verifying functionality. Identify appropriate tools used for troubleshooting and repairing printer / scanner problems.
- 4.4 Perform preventive maintenance of printers and scanners. Perform scheduled maintenance according to vendor guidelines (e.g. install maintenance kits, reset page counts). Ensure a suitable environment. Use recommended supplies.

5.0 Networks

- 5.1 Identify the fundamental principles or networks. Identify names, purposes and characteristics of basic network protocols and terminologies.
- 5.2 Install, configure, optimize and upgrade networks. Install and configure browsers.
- 5.3 Use tools and diagnostic procedures to troubleshoot network problems. Identify names, purposes and characteristics of tools.
- 5.4 Perform preventive maintenance of networks including securing and protecting network cabling.

6.0 Security

- 6.1 Identify the fundamentals and principles of security. Identify the purposes and characteristics of access control.
- 6.2 Install, configure, upgrade and optimize security. Install and configure software, wireless and data security.
- 6.3 Identify tool, diagnostic procedures and troubleshooting techniques for security. Diagnose and troubleshoot software and data security issues.
- 6.4 Perform preventive maintenance for security. Recognize social engineering and address social engineering situations

7.0 Safety and Environmental Issues

- 7.1 Identify potential hazards and proper safety procedures including power supply, display devices and environment (e.g. trip, liquid, situational, atmospheric hazards and high-voltage and moving equipment).

8.0 Communication and Professionalism

- 8.1 Use of good communication skills including listening and tact / discretion, when communicating with customers and colleagues. Use of clear, concise and direct statements. Allowing the customer to complete statements. Clarifying customer statements. Avoidance of jargon, abbreviations and acronyms. Listening to customers
- 8.2 Use job-related professional behaviour including notation of privacy, confidentiality and respect for the customer and customers' property.

Cisco Certified Network Associate (CCNA)

CCNA is the entry-level certification for the Cisco Career Certification Program. Cisco's globally recognized certifications certify the competence of Internetworking professionals in the areas of routing, switching and connectivity. CCNA is the first step in this route.

CCNA is proof of a solid foundation in networking. It is a prerequisite for CCNP, CCDP, and CCSP certifications, and recommended for CCIP certification.

CCNA (Exam Code 640-801) Objectives

Planning & Designing

- Design a simple LAN using Cisco Technology
- Design an IP addressing scheme to meet design requirements
- Select an appropriate routing protocol based on user requirements
- Design a simple internetwork using Cisco technology
- Develop an access list to meet user specifications
- Choose WAN services to meet customer requirements

Implementation & Operation

- Configure routing protocols given user requirements
- Configure IP addresses, subnet masks, and gateway addresses on routers and hosts
- Configure a router for additional administrative functionality
- Configure a switch with VLANS and inter-switch communication
- Implement a LAN
- Customize a switch configuration to meet specified network requirements
- Manage system image and device configuration files
- Perform an initial configuration on a router
- Perform an initial configuration on a switch
- Implement access lists
- Implement simple WAN protocols

Troubleshooting

- Utilize the OSI model as a guide for systematic network troubleshooting
- Perform LAN and VLAN troubleshooting
- Troubleshoot routing protocols
- Troubleshoot IP addressing and host configuration
- Troubleshoot a device as part of a working network
- Troubleshoot an access list
- Perform simple WAN troubleshooting

Technology

- Describe network communications using layered models
- Describe the Spanning Tree process
- Compare and contrast key characteristics of LAN environments
- Evaluate the characteristics of routing protocols
- Evaluate TCP/IP communication process and its associated protocols
- Describe the components of network devices
- Evaluate rules for packet control
- Evaluate key characteristics of WANs

Microsoft Certified Professional

Microsoft Certified Professional (MCP) candidates are required to pass one current Microsoft certification exam that provides a valid and reliable measure of technical proficiency and expertise.

MCP exams are developed with the input of professionals in the industry and reflect how Microsoft products are used in organizations throughout the world

Installing, Configuring, and Administering Microsoft Windows XP Professional (Exam 70-270) Objectives

Installing Windows XP Professional

- Perform and troubleshoot an attended installation of Windows XP Professional.
- Perform and troubleshoot an unattended installation of Windows XP Professional.
- Install Windows XP Professional by using Remote Installation Services (RIS).
- Install Windows XP Professional by using the System Preparation Tool.
- Create unattended answer files by using Setup Manager to automate the installation of Windows XP Professional.
- Upgrade from a previous version of Windows to Windows XP Professional.
- Prepare a computer to meet upgrade requirements.
- Migrate existing user environments to a new installation.
- Perform post-installation updates and product activation.
- Perform post-installation updates and product activation.
- Troubleshoot failed installations.

Implementing and Conducting Administration of Resources

- Monitor, manage, and troubleshoot access to files and folders.
- Configure, manage, and troubleshoot file compression.
- Control access to files and folders by using permissions.
- Optimize access to files and folders.

Manage and troubleshoot access to shared folders.

- Create and remove shared folders.
- Control access to shared folders by using permissions.
- Manage and troubleshoot Web server resources.

Connect to local and network print devices.

- Manage printers and print jobs.
- Control access to printers by using permissions.

- Connect to an Internet printer.
- Connect to a local print device.
- Configure and manage file systems.

Convert from one file system to another file system.

Configure NTFS, FAT32, or FAT file systems.

Manage and troubleshoot access to and synchronization of offline files.

Implementing, Managing, Monitoring, and Troubleshooting Hardware Devices and Drivers

Implement, manage, and troubleshoot disk devices.

- Install, configure, and manage DVD and CD-ROM devices.
- Monitor and configure disks.
- Monitor, configure, and troubleshoot volumes.
- Monitor and configure removable media, such as tape devices.

Implement, manage, and troubleshoot display devices.

- Configure multiple-display support.
- Install, configure, and troubleshoot a video adapter.

Configure Advanced Configuration Power Interface (ACPI).

Implement, manage, and troubleshoot input and output (I/O) devices.

- Monitor, configure, and troubleshoot I/O devices, such as printers, scanners, multimedia devices, mouse, keyboard, and smart card reader.
- Monitor, configure, and troubleshoot multimedia hardware, such as cameras.
- Install, configure, and manage modems.
- Install, configure, and manage Infrared Data Association (IrDA) devices.
- Install, configure, and manage wireless devices.
- Install, configure, and manage USB devices.
- Install, configure, and manage hand held devices.
- Install, configure, and manage network adapters.

Manage and troubleshoot drivers and driver signing.

Monitor and configure multiprocessor computers.

Monitoring and Optimizing System Performance and Reliability

Monitor, optimize, and troubleshoot performance of the Windows XP Professional desktop.

- Optimize and troubleshoot memory performance.
- Optimize and troubleshoot processor utilization.
- Optimize and troubleshoot disk performance.
- Optimize and troubleshoot application performance.
- Configure, manage, and troubleshoot Scheduled Tasks.

Manage, monitor, and optimize system performance for mobile users.

Restore and back up the operating system, System State data, and user data.

- Recover System State data and user data by using Windows Backup.
- Troubleshoot system restoration by starting in safe mode.
- Recover System State data and user data by using the Recovery console.

Configuring and Troubleshooting the Desktop Environment

Configure and manage user profiles and desktop settings.

Configure support for multiple languages or multiple locations.

- Enable multiple-language support.
- Configure multiple-language support for users.
- Configure local settings.
- Configure Windows XP Professional for multiple locations.

Manage applications by using Windows Installer packages.

Implementing, Managing, and Troubleshooting Network Protocols and Services

Configure and troubleshoot the TCP/IP protocol.

Connect to computers by using dial-up networking.

- Connect to computers by using a virtual private network (VPN) connection.
- Create a dial-up connection to connect to a remote access server.
- Connect to the Internet by using dial-up networking.
- Configure and troubleshoot Internet Connection Sharing (ICS).

Connect to resources by using Internet Explorer.

Configure, manage, and implement Internet Information Services (IIS).

Configure, manage, and troubleshoot Remote Desktop and Remote Assistance.

Configure, manage, and troubleshoot an Internet Connection Firewall (ICF).

Configuring, Managing, and Troubleshooting Security

Configure, manage, and troubleshoot Encrypting File System (EFS).

Configure, manage, and troubleshoot a security configuration and local security policy.

Configure, manage, and troubleshoot local user and group accounts.

- Configure, manage, and troubleshoot auditing.
- Configure, manage, and troubleshoot account settings.
- Configure, manage, and troubleshoot account policy.
- Configure, manage, and troubleshoot user and group rights.
- Troubleshoot cache credentials.

Configure, manage, and troubleshoot Internet Explorer security settings.

Managing and Maintaining a Microsoft Windows Server 2003 Environment (Exam 70-290) Objectives

Manage basic disks and dynamic disks

Monitor server hardware. Tools might include Device Manager, the Hardware Troubleshooting Wizard, and appropriate Control Panel items

Optimize server disk performance.

- Implement a RAID solution.
- Defragment volumes and partitions.

Troubleshoot server hardware devices.

- Diagnose and resolve issues related to hardware settings.
- Diagnose and resolve issues related to server hardware and hardware driver upgrades.

Install and configure server hardware devices.

- Configure driver signing options.
- Configure resource settings for a device.
- Configure device properties and settings.

Managing Users, Computers, and Groups

Manage local, roaming, and mandatory user profiles

Create and manage computer accounts in an Active Directory environment.

Create and manage groups.

- Identify and modify the scope of a group.
- Find domain groups in which a user is a member.
- Manage group membership.
- Create and modify groups by using the Active Directory Users and Computers Microsoft Management Console (MMC) snap-in.
- Create and modify groups by using automation

Create and manage user accounts.

- Create and modify user accounts by using the Active Directory Users and Computers MMC snap-in.
- Create and modify user accounts by using automation.
- Import user accounts.

Troubleshoot computer accounts.

- Diagnose and resolve issues related to computer accounts by using the Active Directory Users and Computers MMC snap-in.
- Reset computer accounts.

Troubleshoot user accounts.

- Diagnose and resolve account lockouts.
- Diagnose and resolve issues related to user account properties.

Troubleshoot user authentication issues.

Managing and Maintaining Access to Resources

Configure access to shared folders.

- Manage shared folder permissions.

Troubleshoot Terminal Services.

- Diagnose and resolve issues related to Terminal Services security.
- Diagnose and resolve issues related to client access to Terminal Services.

Configure file system permissions.

- Verify effective permissions when granting permissions.
- Change ownership of files and folders.

Troubleshoot access to files and shared folders.

Managing and Maintaining a Server Environment

Monitor and analyze events. Tools might include Event Viewer and System Monitor

Manage software update infrastructure

Manage software site licensing.

Manage servers remotely.

- Manage a server by using Remote Assistance.
- Manage a server by using Terminal Services remote administration mode.
- Manage a server by using available support tools.

Troubleshoot print queues.

Troubleshoot print queues.

Monitor system performance

Monitor file and print servers. Tools might include Task Manager, Event Viewer, and System Monitor.

- Monitor disk quotas.
- Monitor print queues.
- Monitor server hardware for bottlenecks.

Monitor and optimize a server environment for application performance.

- Monitor memory performance objects.
- Monitor network performance objects.
- Monitor process performance objects.
- Monitor disk performance objects.

Manage a Web server.

- Manage Internet Information Services (IIS).
- Manage security for IIS.

Manage a Web server.

- Manage Internet Information Services (IIS).
- Manage security for IIS.

Managing and Implementing Disaster Recovery

Perform system recovery for a server.

- Implement Automated System Recovery (ASR).
- Restore data from shadow copy volumes.
- Back up files and System State data to media.
- Configure security for backup operations.

Manage backup procedures.

- Verify the successful completion of backup jobs.
- Manage backup storage media.

Recover from server hardware failure.

Restore backup data.

Schedule backup jobs

CompTIA Linux+

CompTIA Linux+ certification is a vendor-neutral credential, generic across distributions that provides students with knowledge in installation, operation and troubleshooting for Linux operating systems . Because Linux, by its nature, is vendor-independent, there was a strong need in the industry for a basic, comprehensive and generic Linux certification. Becoming CompTIA Linux+ certified gives an individual a recognized industry credential that offers proof of knowledge and expertise in Linux technologies. This certification also provides a path to a variety of fulfilling and challenging Linux-related careers.

Linux+ (Exam XK0-002) Objectives:

- Outline the key features of the Linux operating system, list the advantages of using Linux, and explain the common uses of Linux in the industry.
- Install Fedora Core 2; describe common types of central processing units, physical memory, disk drives, mainboards, peripheral devices, video adapter cards, monitors, keyboards, and mice; and obtain the hardware and software information necessary to install Linux.
- Explain the function of the Filesystem Hierarchy Standard, use standard commands to manage files and directories, find files and directories, understand and create linked files, modify file and directory ownership, define and change file and directory permissions, identify the default permissions created on files and directories, and apply special file and directory permissions.
- Install and configure SCSI devices; identify default IRQs, I/O addresses, and DMAs; explain how Plug-and-Play can be used to assign configuration to peripheral devices; explore fault-tolerant disk systems and RAID configurations; outline the steps used to install Linux from source files on a hard disk or network server; create a kickstart file; and troubleshoot the installation process.
- Redirect the input and output of a command; identify, manipulate, create, and export shell variables; edit environment files to create variables; describe the purpose of shell scripts; create and execute shell scripts; use common decision constructs in shell scripts; and use and customize the BASH shell command history feature.
- Outline the major steps necessary to boot a Linux system, configure the LILO and GRUB boot loaders, dual boot Linux with the Windows operating system, understand how the init daemon initializes the system at boot time, and understand runlevels.
- Explain the purpose of the GUI components such as X Windows, window managers, and desktop environments; list the common window managers and desktop environments; configure X Windows by using various utilities; start and stop an X server; and run X applications from the command line.