CompTIA A+ 220-802 Objectives

The CompTIA A+ 220-802 exam is divided up by domain. Each domain makes up a certain percentage of the test. The four domains of the A+ 220-802 exam and their respective percentages are listed in the following table.

Domain	Percentage of exam
1.0 Operating Systems	33%
2.0 Security	22%
3.0 Mobile Devices	9%
4.0 Troubleshooting	36%
Total	100%

Operating Systems 33%

1.1 Compare and contrast the features and requirements of various Microsoft Operating Systems.

Windows XP Home, Windows XP Professional, Windows XP Media Center, Windows XP 64-bit Professional

Windows Vista Home Basic, Windows Vista Home Premium, Windows Vista Business, Windows Vista Ultimate, Windows Vista Enterprise

Windows 7 Starter, Windows 7 Home Premium, Windows 7 Professional, Windows 7 Ultimate, Windows 7 Enterprise

Features:

- 32-bit vs. 64-bit

- Aero, gadgets, user account control, bit-locker, shadow copy, system restore, ready boost, sidebar, compatibility mode, XP mode, easy transfer, administrative tools, defender, Windows firewall, security center, event viewer, file structure and paths, category view vs. classic view

Upgrade paths – differences between in place upgrades, compatibility tools, Windows upgrade OS advisor

1.2 Given a scenario, install, and configure the operating system using the most appropriate method.

Boot methods

- USB

- CD-ROM

- DVD

- PXE

Type of installations

- Creating image
- Unattended installation
- Upgrade
- Clean install
- Repair installation
- Multiboot
- Remote network installation
- Image deployment

Partitioning

- Dynamic
- Basic
- Primary
- Extended
- Logical

File system types/formatting

- FAT
- FAT32
- NTFS
- CDFS
- Quick format vs. full format

Load alternate third party drivers when necessary

Workgroup vs. Domain setup

Time/date/region/language settings

Driver installation, software and windows updates

Factory recovery partition

1.3 Given a scenario, use appropriate command line tools.

Networking

- PING
- TRACERT
- NETSTAT
- IPCONFIG
- NET
- NSLOOKUP
- NBTSTAT

OS

- Taskkill
- BOOTREC
- SHUTDOWN
- Tasklist
- MD
- RD
- CD
- DEL
- FDISK
- FORMAT
- COPY
- XCOPY
- ROBOCOPY
- DISKPART
- SFC
- CHKDSK
- [command name] /?

Recovery console

- Fixboot

- Fixmbr

1.4 Given a scenario, use appropriate operating system features and tools.

Administrative

- Computer management

- Device manager

- Users and groups

- Local security policy

- Performance monitor

- Services

- System configuration

- Task scheduler

- Component services

- Data sources

- Print management

- Windows memory diagnostics

- Windows firewall

- Advanced security

MSCONFIG

- General

- Boot

- Services

- Startup

- Tools

Task Manager

- Applications

- Processes

- Performance

- Networking

- Users

Disk management

- Drive status

- Mounting

- Extending partitions

- Splitting partitions

- Assigning drive letters

- Adding drives

- Adding arrays

Other

- User State Migration tool (USMT), File and Settings Transfer Wizard, Windows Easy Transfer

Run line utilities

- MSCONFIG

- REGEDIT

- CMD

- SERVICES.MSC

- MMC

- MSTSC

- NOTEPAD

- EXPLORER

- MSINFO32

- DXDIAG

1.5 Given a scenario, use Control Panel utilities (the items are organized by "classic view/large icons" in Windows).

Common to all Microsoft Operating Systems

- ■ Internet options
  - ■ Connections
  - ■ Security
  - ■ General
  - ■ Privacy
  - ■ Programs
  - ■ Advanced
- ■ Display
  - ■ Resolution
- ■ User accounts
- ■ Folder options
  - ■ Sharing
  - ■ View hidden files
  - ■ Hide extensions
  - ■ Layout
- ■ System
  - ■ Performance (virtual memory)
  - ■ Hardware profiles
  - ■ Remote settings
  - ■ System protection
- ■ Security center
- ■ Windows firewall

- Power options
  - Hibernate
  - Power plans
  - Sleep/suspend
  - Standby

Unique to Windows XP

- Add/remove programs
- Network connections
- Printers and faxes
- Automatic updates
- Network setup wizard

Unique to Vista

- Tablet PC settings
- Pen and input devices
- Offline files
- Problem reports and solutions
- Printers

Unique to Windows 7

- HomeGroup
- Action center
- Remote applications and desktop applications
- Troubleshooting

1.6 Setup and configure Windows networking on a client/desktop.

HomeGroup, file/print sharing

WorkGroup vs. domain setup

Network shares/mapping drives

Establish networking connections

- VPN

- Dialups

- Wireless

- Wired

- WWAN (Cellular)

Proxy settings

Remote desktop

Home vs. Work vs. Public network settings

Firewall settings

- Exceptions

- Configuration

- Enabling/disabling Windows firewall

Configuring an alternative IP address in Windows

- IP addressing

- Subnet mask

- DNS

- Gateway

Network card properties

- Half duplex/full duplex/auto

- Speed

- Wake-on-LAN

- PoE

- QoS

1.7 Perform preventive maintenance procedures using appropriate tools.

Best practices

- ■ Schedules backups
- ■ Scheduled check disks
- ■ Scheduled defragmentation
- ■ Windows updates
- ■ Patch management
- ■ Driver/firmware updates
- ■ Antivirus updates

Tools

- ■ Backup
- ■ System restore
- ■ Check disk
- ■ Recovery image
- ■ Defrag

1.8 Explain the differences among basic OS security settings.

User and groups

- ■ Administrator
- ■ Power user
- ■ Guest
- ■ Standard user

NTFS vs. Share permissions

- ■ Allow vs. deny
- ■ Moving vs. copying folders and files

- ◼ File attributes

Shared files and folders

- ◼ Administrative shares vs. local shares

- ◼ Permission propagation

- ◼ Inheritance

System files and folders

User authentication

- ◼ Single sign-on

1.9 Explain the basics of client-side virtualization.

Purpose of virtual machines

Resource requirements

Emulator requirements

Security requirements

Network requirements

Hypervisor

2.0 Security 22%

2.1 Apply and use common prevention methods.

Physical security

- ◼ Lock doors

- ◼ Tailgating

- ◼ Securing physical documents/passwords/shredding

- ■ Biometrics
- ■ Badges
- ■ Key fobs
- ■ RFID badge
- ■ RSA token
- ■ Privacy filters
- ■ Retinal

Digital security

- ■ Antivirus
- ■ Firewalls
- ■ Antispyware
- ■ User authentication/strong passwords
- ■ Directory permissions

User education

Principle of least privilege

2.2 Compare and contrast common security threats.

Social engineering

Malware

Rootkits

Phishing

Shoulder surfing

Spyware

Viruses

- ■ Worms
- ■ Trojans

2.3 Implement security best practices to secure a workstation.

Setting strong passwords

Requiring passwords

Restricting user permissions

Changing default user names

Disabling guest account

Screensaver required password

Disable autorun

2.4 Given a scenario, use the appropriate data destruction/ disposal method.

Low level format vs. standard format

Hard drive sanitation and sanitation methods

- Overwrite
- Drive wipe

Physical destruction

- Shredder
- Drill
- Electromagnetic
- Degaussing tool

2.5 Given a scenario, secure a SOHO wireless network.

Change default user-names and passwords

Changing SSID

Setting encryption

Disabling SSID broadcast

Enable MAC filtering

Antenna and access point placement

Radio power levels

Assign static IP addresses

2.6 Given a scenario, secure a SOHO wired network.

Change default usernames and passwords

Enable MAC filtering

Assign static IP addresses

Disabling ports

Physical security

3.0 Mobile Devices 9%

3.1 Explain the basic features of mobile operating systems.

Android vs. iOS

- Open source vs. closed source/vendor specific
- App source (app store and market)
- Screen orientation (accelerometer/gyroscope)
- Screen calibration
- GPS and geotracking

3.2 Establish basic network connectivity and configure email.

Wireless / cellular data network (enable/disable)

Bluetooth

- Enable Bluetooth
- Enable pairing
- Find device for pairing
- Enter appropriate pin code
- Test connectivity

Email configuration

- Server address
  - POP3
  - IMAP
  - Port and SSL settings
- Exchange
- Gmail

3.3 Compare and contrast methods for securing mobile devices.

Passcode locks

Remote wipes

Locator applications

Remote backup applications

Failed login attempts restrictions

Antivirus

Patching/OS updates

3.4 Compare and contrast hardware differences in regards to tablets and laptops.

No field serviceable parts

Typically not upgradeable

Touch interface

- Touch flow
- Multitouch

Solid state drives

3.5 Execute and configure mobile device synchronization.

Types of data to synchronize

- Contacts
- Programs
- Email

- Pictures
- Music
- Videos

Software requirements to install the application on the PC

Connection types to enable synchronization

4.0 Troubleshooting 36%

4.1 Given a scenario, explain the troubleshooting theory.

Identify the problem

- Question the user and identify user changes to computer and perform backups before making changes

Establish a theory of probable cause (question the obvious)

Test the theory to determine cause

- Once theory is confirmed determine next steps to resolve problem
- If theory is not confirmed re-establish new theory or escalate

Establish a plan of action to resolve the problem and implement the solution

Verify full system functionality and if applicable implement preventive measures

Document findings, actions and outcomes

4.2 Given a scenario, troubleshoot common problems related to motherboards, RAM, CPU and power with appropriate tools.

Common symptoms

- Unexpected shutdowns
- System lockups
- POST code beeps
- Blank screen on bootup
- BIOS time and settings resets
- Attempts to boot to incorrect device
- Continuous reboots
- No power
- Overheating
- Loud noise
- Intermittent device failure
- Fans spin – no power to other devices
- Indicator lights
- Smoke
- Burning smell
- BSOD

Tools

- Multimeter
- Power supply tester
- Loopback plugs
- POST card

4.3 Given a scenario, troubleshoot hard drives and RAID arrays with appropriate tools.

Common symptoms

- Read/write failure
- Slow performance
- Loud clicking noise
- Failure to boot
- Drive not recognized
- OS not found
- RAID not found
- RAID stops working
- BSOD

Tools

- Screwdriver
- External enclosures
- CHKDSK
- FORMAT
- FDISK
- File recovery software

4.4 Given a scenario, troubleshoot common video and display issues.

Common symptoms

- VGA mode
- No image on screen
- Overheat shutdown
- Dead pixels
- Artifacts
- Color patterns incorrect
- Dim image
- Flickering image
- Distorted image
- Discoloration (degaussing)
- BSOD

4.5 Given a scenario, troubleshoot wired and wireless networks with appropriate tools.

Common symptoms

- No connectivity
- APIPA address
- Limited connectivity
- Local connectivity
- Intermittent connectivity
- IP conflict
- Slow transfer speeds
- Low RF signal

Tools

- Cable tester
- Loopback plug
- Punch down tools
- Toner probes
- Wire strippers
- Crimper
- PING
- IPCONFIG
- TRACERT
- NETSTAT
- NBTSTAT
- NET
- Wireless locator

4.6 Given a scenario, troubleshoot operating system problems with appropriate tools.

Common symptoms

- BSOD
- Failure to boot
- Improper shutdown
- Spontaneous shutdown/restart
- RAID not detected during installation
- Device fails to start
- Missing dll message
- Services fails to start
- Compatibility error

- Slow system performance
- Boots to safe mode
- File fails to open
- Missing NTLDR
- Missing Boot.ini
- Missing operating system
- Missing Graphical Interface
- Graphical Interface fails to load
- Invalid boot disk

Tools

- Fixboot
- Recovery console
- Fixmbr
- Sfc
- Repair disks
- Pre-installation environments
- MSCONFIG
- DEFRAG
- REGSVR32
- REGEDIT
- Event viewer
- Safe mode
- Command prompt
- Emergency repair disk
- Automated system recovery

4.7 Given a scenario, troubleshoot common security issues with appropriate tools and best practices.

Common symptoms

- Pop-ups
- Browser redirection
- Security alerts
- Slow performance
- Internet connectivity issues
- PC locks up
- Windows updates failures
- Rogue antivirus
- Spam
- Renamed system files
- Files disappearing
- File permission changes
- Hijacked email
- Access denied

Tools

- Anti-virus software
- Anti-malware software
- Anti-spyware software
- Recovery console
- System restore
- Pre-installation environments
- Event viewer

Best practices for malware removal

- ■ Identify malware symptoms
- ■ Quarantine infected system
- ■ Disable system restore
- ■ Remediate infected systems
    - ■ Update anti-virus software
    - ■ Scan and removal techniques (safe mode, pre-installation environment)
- ■ Schedule scans and updates
- ■ Enable system restore and create restore point
- ■ Educate end user

4.8 Given a scenario, troubleshoot, and repair common laptop issues while adhering to the appropriate procedures.

Common symptoms

- ■ No display
- ■ Dim display
- ■ Flickering display
- ■ Sticking keys
- ■ Intermittent wireless
- ■ Battery not charging
- ■ Ghost cursor
- ■ No power
- ■ Num lock indicator lights
- ■ No wireless connectivity

- No Bluetooth connectivity

- Cannot display to external monitor

Disassembling processes for proper re-assembly

- Document and label cable and screw locations

- Organize parts

- Refer to manufacturer documentation

- Use appropriate hand tools

4.9 Given a scenario, troubleshoot printers with appropriate tools

Common symptoms

- Streaks

- Faded prints

- Ghost images

- Toner not fused to the paper

- Creased paper

- Paper not feeding

- Paper jam

- No connectivity

- Garbled characters on paper

- Vertical lines on page

- Backed up print queue

- Low memory errors

- Access denied

- Printer will not print

- Color prints in wrong print color

- Unable to install printer

- Error codes

Tools

- Maintenance kit
- Toner vacuum
- Compressed air
- Printer spooler