

CompTIA A+

Certification Exam

Core 1 Pre-draft Exam Objectives

Exam Number: Core 1 (220-1201)

- Pre-draft Exam Objectives summarize the tasks and skills identified in the Job Task Analysis (JTA) workshop that provide directional information about the upcoming exam version.
- The Draft Exam Objectives will replace the Pre-draft Exam Objectives after approximately two months when the skills have been peer-evaluated and validated through a JTA survey of job role practitioners.
- Pre-draft Exam Objectives may contain typos and errata that will be corrected during the development process.
- CompTIA will not accept feedback on the Pre-draft Exam Objectives document. If errors are found, please wait until the Draft Exam Objectives are posted, and then provide feedback using the Draft Exam Objectives Feedback form.

1.0 Mobile Devices

1.1 Given a scenario, monitor mobile device hardware and use appropriate replacement techniques.

- Battery
- Keyboard/keys
- RAM
- HDD/SSD
- Wireless cards
- Physical privacy and security components
 - Biometrics
 - Near-field scanner features
- Wi-Fi antenna connector/placement
- Camera/webcam
- Microphone

1.2 Compare and contrast accessories and connectivity options for mobile devices.

- Connection methods
 - USB/USB-C/microUSB/miniUSB
 - Lightning
 - NFC
 - Bluetooth
 - Tethering/hotspot
- Accessories
 - Stylus
 - Headsets
 - Speakers
 - Webcam
- Docking station
- Port replicator
- Trackpad/drawing pad/track points

1.3 Given a scenario, configure basic mobile device network connectivity and provide application support.

- Wireless / cellular data network (enable/disable)
 - 3G/4G/5G
 - Hotspot
 - Wi-Fi
 - SIM/eSIM
- Bluetooth
 - Enable Bluetooth
 - Enable pairing
 - Find a device for pairing
 - Enter the appropriate pin code
 - Test connectivity
- Location services
 - GPS services
 - Cellular location services
- MDM
 - Device configurations
 - Corporate
 - BYOD
 - Policy enforcement

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- Corporate applications
- Mobile device synchronization
 - Recognizing data caps
 - Calendar
 - Contacts
 - Business applications
 - Mail
 - Cloud storage

2.0 Networking

2.1 Compare and contrast TCP and UDP ports, protocols, and their purposes.

- Ports and protocols
 - 20-21 – FTP
 - 22 – SSH
 - 23 – TELNET
 - 25 – SMTP
 - 53 – DNS
 - 80 – HTTP
 - 110 – POP3
 - 143 – IMAP
 - 443 – HTTPS
 - 3389 – RDP
 - 137-139 NetBIOS/NetBT
 - 445 – SMB/CIFS
 - 67/68 – DHCP
 - 389 – LDAP
- TCP vs. UDP

2.2 Explain wireless networking technologies.

- Frequencies
 - 2.4GHz
 - 5GHz
 - 6GHz
- Channels
 - Regulations
 - Channel selection
 - Widths
 - Frequencies
 - Bands
- Bluetooth
- 802.11 standards
- NFC
- RFID

2.3 Summarize services provided by networked hosts.

- Server roles
 - DNS
 - DHCP
 - Fileshare
 - Print servers
 - Mail servers
 - Syslog
 - Web servers

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- Authentication, Authorization, and Accounting (AAA)
- Database servers
- NTP
- Internet appliances
 - Spam gateways
 - Unified threat management (UTM)
 - Load balancers
 - Proxy servers
- Legacy/embedded systems
 - SCADA
- IoT devices

2.4 Explain common network configuration concepts.

- DNS
 - A
 - AAAA
 - CNAME
 - MX
 - TXT
 - Spam management
 - (i) DKIM
 - (ii) SPF
 - (iii) DMARC
- DHCP
 - Leases
 - Reservations
 - Scope
 - Exclusions
- VLAN
- VPN

2.5 Compare and contrast common networking hardware devices.

- Routers
- Switches
 - Managed
 - Unmanaged
- Access points
- Patch panel
- Firewall
- Power over Ethernet (PoE)
 - Injectors
 - Switch
 - PoE standards
- Cable modem
- DSL
- Optical Network Terminal (ONT)
- NIC
 - Physical (MAC) address

2.6 Given a scenario, configure basic wired/wireless SOHO networks.

- IP addressing
 - IPv4
 - Private addresses

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- Public addresses
- IPv6
- APIPA
- Static
- Dynamic
- Subnet mask
- Gateway

2.7 Compare and contrast internet connection types, network types, and their characteristics.

- Internet connection types
 - Satellite
 - Fiber
 - Cable
 - DSL
 - Cellular
 - Wireless internet service provider (WISP)
- Network types
 - LAN
 - WAN
 - PAN
 - MAN
 - SAN
 - WLAN

2.8 Explain networking tools and their purposes.

- Crimper
- Cable stripper
- Wi-Fi analyzer
- Toner probe
- Punchdown tool
- Cable tester
- Loopback plug
- Network tap

3.0 Hardware

3.1 Compare and contrast display components and attributes.

- Types
 - LCD
 - IPS
 - TN
 - VA
 - OLED
 - Mini-LED
- Touchscreen/digitizer
- Inverter
- Attributes
 - Pixel density
 - Refresh rates
 - Screen resolution
 - Color gamut

3.2 Summarize basic cable types and their connectors, features, and their purposes.

- Network cables
 - Copper
 - Categories
 - (i) T568A/T568B standards
 - Coaxial
 - Shielded twisted pair
 - (i) Direct burial
 - Unshielded twisted pair
 - Plenum-rated
 - Optical
 - Single-mode
 - Multi-mode
- Peripheral cables
 - USB 2.0
 - USB 3.0
 - Serial
 - Thunderbolt
- Video cables
 - HDMI
 - DisplayPort
 - DVI
 - VGA
 - USB-C
- Hard drive cables
 - SATA
 - eSATA
- Adapters
- Connector types
 - RJ-11
 - RJ-45
 - F type
 - ST
 - SC
 - LC
 - Punchdown block
 - Micro-USB
 - Mini-USB
 - USB-C
 - Molex
 - Lightning
 - DB-9

3.3 Compare and contrast RAM characteristics.

- Form factors
 - SODIMM
 - DIMM
- DDR iterations
- ECC vs. non-ECC RAM
- Channel configurations

3.4 Compare and contrast storage devices.

- Hard drives
 - Spindle speeds
 - Form factor

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- 2.5
 - 3.5
- Solid State Drives
 - Communications interfaces
 - NVMe
 - SATA
 - PCIe
 - SAS
 - Form Factors
 - M.2
 - mSATA
- Drive configurations
 - RAID 0, 1, 5, 6, 10
- Removable storage
 - Flash drives
 - Memory cards
- Optical drives

3.5 Given a scenario, install and configure motherboards, CPUs, and add-on cards.

- Motherboard form factor
 - ATX
 - micro-ATX
 - ITX
- Motherboard connectors types
 - PCI
 - PCIe
 - Power connectors
 - SATA
 - eSATA
 - SAN
 - Headers
 - M.2
- Motherboard compatibility
 - CPU socket types
 - AMD
 - Intel
 - Multi-socket
- BIOS/UEFI settings
 - Boot options
 - USB permissions
 - TPM security features
 - Fan considerations
 - Secure boot
 - Boot password
 - BIOS password
 - Temperature monitoring
- Virtualization support
- Encryption
 - TPM
 - HSM
- CPU architecture
 - x86/x64
 - ARM
 - Core configurations

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- Expansion cards
 - Sound card
 - Video card
 - Capture card
 - Network interface card
- Cooling
 - Fans
 - Heat sink
 - Thermal paste/pads
 - Liquid

3.6 Given a scenario, install the appropriate power supply.

- Input 110-120 VAC vs. 220-240 VAC
- Output 3.3V vs. 5V vs. 12V
- 20+4 pin motherboard connector
- Redundant power supply
- Modular power supply
- Wattage rating
- Energy efficiency

3.7 Given a scenario, deploy and configure multifunction devices/printers and settings.

- Properly unboxing device – setup location considerations
- Use appropriate drivers for a given operating system
 - PCL vs. postscript
- Firmware
- Device connectivity
 - USB
 - Ethernet
 - Wireless
- Public/shared devices
 - Printer share
 - Print server
- Configuration settings
 - Duplex
 - Orientation
 - Tray settings
 - Quality
- Security
 - User authentication
 - Badging
 - Audit logs
 - Secured prints
- Network scan services
 - Email
 - SMB
 - Cloud services
- ADF/flatbed scanner

3.8 Given a scenario, perform appropriate printer maintenance.

- Laser
 - Maintenance: Replacing toner, applying maintenance kit, calibration, cleaning
- Inkjet

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- Ink cartridge, print head, roller, feeder
- Maintenance: Clean heads, replace cartridges, calibration, clear jams
- Thermal
 - Feed assembly
 - Special thermal paper
 - Maintenance: Replace paper, clean heating element, remove debris
- Impact
 - Multi-part paper
 - Maintenance: Replace ribbon, replace print head, replace paper

4.0 Virtualization & Cloud Computing

4.1 Explain virtualization concepts

- Purpose of virtual machines
 - Sandbox
 - Test development
 - Application virtualization
 - Legacy software/OS
 - Cross-platform virtualization
- Requirements
 - Security
 - Network
 - Storage
- Desktop virtualization
 - VDI
- Containers
- Hypervisors
 - Type I
 - Type II

4.2 Summarize cloud computing concepts.

- Common cloud models
 - Private cloud
 - Public cloud
 - Hybrid cloud
 - Community cloud
 - IaaS
 - SaaS
 - PaaS
- Cloud characteristics
 - Shared resources vs. dedicated resources
 - Metered utilization
 - Ingress/egress
 - Elasticity
 - Availability
 - File synchronization
 - Multi-tenancy

5.0 Hardware and Network Troubleshooting

5.1 Given a scenario, troubleshoot motherboards, RAM, CPU, and power

- Common symptoms
 - POST beeps
 - Proprietary crash screens
 - Blank screen

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- No power
- Sluggish performance
- Overheating
- Burning smell
- Random shutdown
- Application crashes
- Unusual noise
- Capacitor swelling
- Inaccurate system date/time

5.2 Given a scenario, troubleshoot drive and RAID array issues

- Common symptoms
 - LED status indicators
 - Grinding noises
 - Clicking sounds
 - Bootable device not found
 - Data loss/corruption
 - RAID failure
 - SMART failure
 - Extended read/write times
 - Low performance (IOPS)
 - Missing drives in OS
 - Array missing
 - Audible alarms

5.3 Given a scenario, troubleshoot video, projector, and display issues

- Common symptoms
 - Incorrect input source
 - Physical cabling issues
 - Burnt-out bulb
 - Fuzzy image
 - Display burn-in
 - Dead pixels
 - Flashing screen
 - Incorrect color display
 - Audio issues
 - Dim image
 - Intermittent projector shutdown
 - Sizing issues
 - Distorted image

5.4 Given a scenario, troubleshoot common mobile device issues

- Common symptoms
 - Poor battery health
 - Swollen battery
 - Broken screen
 - Improper charging
 - Poor/no connectivity
 - Liquid damage
 - Overheating
 - Digitizer issues
 - Physically damaged ports
 - Malware
 - Cursor drift/touch calibration
 - Unable to install new apps

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- Stylus does not work
- Degraded performance

5.5 Given a scenario, troubleshoot network issues

- Common symptoms
 - Intermittent wireless connectivity
 - Slow network speeds
 - Limited connectivity
 - Jitter
 - Poor VoIP quality
 - Port flapping
 - High latency
 - External interference
 - Authentication failures
 - Intermittent internet connectivity

5.6 Given a scenario, troubleshoot printer issues

- Lines down the printed pages
- Garbled print
- Paper jams
- Faded prints
- Paper not feeding
- Multi-page misfeed
- Multiple prints pending in queue
- Speckling on printed pages
- Double/echo images on the print
- Grinding noise
- Finishing issues
 - Staple jams
 - Hole punch
- Incorrect page orientation
- Tray not recognized
- Connectivity issues
- Frozen print queue