CompTIA A+ Core 1 (220-1201)

Quick Exam Refresher

*This is your **condensed, high-impact review guide** for the CompTIA A+ Core 1 (220-1201) exam. It's designed for **fast recall and final-day confidence** — not in-depth instruction. Use this to reinforce what you already know.*

A+ Core 1 Domains at a Glance

Each domain is weighted differently on the exam, with **Network Troubleshooting** being the largest:

- Domain 1: Mobile Devices (13%)
- Domain 2: Networking (23%)
- Domain 3: Hardware (25%)
- Domain 4: Virtualization and Cloud Computing (11%)
- Domain 5: Hardware and Network Troubleshooting (28%)

Quick Reminder: How the Exam Works

- Number of Questions: Up to 90
- Format: Multiple choice + Performance-Based Questions (PBQs)
- Time Limit: 90 minutes
- Passing Score: 675/900 (75%)
- Test Provider: Pearson VUE (onsite or online)

Remember — you don't need to be perfect to pass!

The A+ Core 1 passing score is about **75%**. That means you **miss up to 22 questions out of 90** and still pass!

Domain 1: Mobile Devices (13%)

Laptop Hardware:

- **SO-DIMM** memory, **2.5" SATA** or **M.2 SSD**, removable Wi-Fi cards with antenna wires.
- **Inverter** only used in older CCFL-backlit LCDs.
- Touchscreen laptops use a **digitizer** layer to detect input.
- Battery, keyboard, RAM, and drives are common field-replaceable components.

Display Components:

- **OLED** = true blacks, fast response, can burn in.
- **IPS LCD** = best color, wide viewing angle.
- **TN LCD** = fast but poor color and angle.
- **Mini-LED** = backlight tech improving contrast on LCDs.

Mobile Device Connections:

- **USB-C**: modern universal connector.
- **Lightning**: used on older Apple devices.
- **Bluetooth**: PAN connection; short-range (10m).
- **NFC**: tap-to-pair/pay; ~4 cm range.
- **Tethering**: share mobile data via USB/Bluetooth/Wi-Fi.
- **Mobile Hotspot**: phone becomes Wi-Fi AP.
- **Wi-Fi Direct**: device-to-device connection without router.
- **Infrared (IR)**: legacy; line-of-sight.
- **Airplane mode** disables all radios.

Synchronization:

- Data syncs via cloud (iCloud, Google), USB, Bluetooth, or local Wi-Fi.
- MDM (Mobile Device Management) enforces security, configures devices in BYOD/COBO environments.

Domain 2: Networking (23%)

Common Ports and Protocols:

Port	Protocol	Description
20/21 TCP	FTP	File transfer (21 control, 20 data)
22 TCP	SSH	Secure remote access
23 TCP	Telnet	Insecure remote access
25 TCP	SMTP	Send email
53 UDP	DNS	Domain name resolution
67/68 UDP	DHCP	IP assignment
80 TCP	HTTP	Web browsing
110 TCP	POP3	Email download
143 TCP	IMAP4	Email sync
443 TCP	HTTPS	Secure web
445 TCP	SMB	Windows file sharing
3389 TCP	RDP	Remote desktop
389 TCP	LDAP	Directory access

Wireless Standards:

- **802.11a** – 5 GHz, 54 Mbps
- **802.11b/g/n** – 2.4 GHz
- **802.11n** – dual band
- **802.11ac** – 5 GHz, >1 Gbps
- **802.11ax** – Wi-Fi 6, includes 6 GHz (Wi-Fi 6E)

Wireless Configurations:

- 2.4 GHz: better range, more interference.
- 5 GHz: faster, less interference.
- **SSID**, encryption (WPA2/WPA3), MAC filtering, channels.

Internet Connection Types:

- **DSL** – phone lines
- **Cable** – coax
- **Fiber** – fastest
- **Satellite** – high latency
- **Cellular** – LTE/5G
- **WISP** – wireless ISP, rural

Network Types:

- **LAN** – local
- **WAN** – wide, e.g. Internet
- **PAN** – Bluetooth
- **MAN** – city-wide
- **SAN** – storage
- **CAN** – campus
- **WLAN** – wireless LAN

Devices:

- **Router** – routes between networks
- **Switch** – connects devices on same network
- **Access Point** – Wi-Fi bridge to wired
- **Modem** – signal conversion
- **Firewall** – security filtering
- **Patch Panel** – organizes cabling
- **PoE** – powers APs/cameras over Ethernet

Tools:

- **Crimper** – attach RJ-45 ends
- **Cable tester** – test pinout
- **Tone generator/probe** – trace cable
- **Loopback plug** – test NIC
- **Punchdown tool** – terminate wires
- **Wi-Fi analyzer** – signal/channel scan

Domain 3: Hardware (25%)

RAM:

- **DIMM** – desktops
- **SO-DIMM** – laptops
- **DDR3/4/5** – not interchangeable
- **ECC RAM** – error correcting, servers only
- **Dual channel** – use matched sticks
- **Virtual memory** – disk used as RAM when full

Storage:

- **HDD** – mechanical, slow, cheap
- **SSD** – fast, no moving parts
- **NVMe (M.2 PCIe)** – fastest
- **SATA SSD** – same interface as HDD
- **RAID**:
  - RAID 0 – stripe, no redundancy
  - RAID 1 – mirror
  - RAID 5 – stripe + parity (1 disk fault)
  - RAID 6 – 2 parity (2 disk fault)
  - RAID 10 – stripe + mirror

Motherboards and CPUs:

- **Form factors:** ATX > mATX > Mini-ITX
- **Sockets:** LGA (Intel), PGA (AMD)
- **BIOS/UEFI settings:** boot order, Secure Boot, virtualization, TPM
- **CMOS battery** – stores date/time and BIOS config

Expansion Cards:

- **GPU** – PCIe x16
- **NIC** – network
- **Sound card**, **RAID card**, **Capture card**
- Use correct slot, ensure PSU can handle load

Power Supplies:

- **20+4 pin ATX**, 12V CPU connector
- **Wattage** = system draw + headroom
- **80 Plus rating** = efficiency
- **SATA power** = flat 15-pin
- **Molex** = legacy 4-pin
- AC input: 110V (US), 220V (EU)

- Modular vs non-modular PSUs
- UPS protects against power loss

Cables and Connectors:

- **RJ-45** – Ethernet
- **RJ-11** – phone/DSL
- **HDMI, DisplayPort** – video
- **DVI, VGA** – legacy
- **USB A/B/C, Micro-USB, Mini-USB**
- **Lightning** – Apple
- **SATA/eSATA** – storage
- **ST, SC, LC** – fiber
- **F-Connector** – coax

Domain 4: Virtualization and Cloud (11%)

Virtualization Basics

- **Type 1 Hypervisor (bare-metal):** Runs directly on hardware, no host OS. Examples: **Hyper-V**, **VMware ESXi**.
- **Type 2 Hypervisor (hosted):** Runs on top of a host OS. Examples: **VMware Workstation**, **VirtualBox**.
- Each **Virtual Machine (VM)** requires allocated **CPU, RAM, storage**, and **network configuration**.
- **Snapshots** capture the state of a VM (RAM, disk, settings) to allow quick rollback during testing or patching.
- Virtualization supports **resource consolidation**, faster provisioning, and lab/testing environments.

Cloud Computing Models

- **SaaS (Software as a Service):** Entire application delivered via browser.
  - Example: **Google Docs, Office 365**
- **PaaS (Platform as a Service):** Provides platform and environment for app development without managing OS or infrastructure.
  - Example: **Heroku, Google App Engine**
- **IaaS (Infrastructure as a Service):** Full virtualized hardware infrastructure over the internet.
  - Example: **AWS EC2, Microsoft Azure VMs**

Cloud Storage and Benefits

- **Cloud storage** platforms like **Dropbox, OneDrive, Google Drive** offer data sync and access from any location.
- Key benefits of cloud computing include:
  - **Scalability:** Resources scale up/down on demand
  - **Cost efficiency:** Pay-as-you-go reduces hardware costs
  - **Accessibility:** Access services from anywhere with internet

Client Types

- **Thick Client:** Full-featured device (e.g., standard desktop or laptop). Handles its own processing, software, and storage.
- **Thin Client:** Lightweight device (e.g., Citrix terminal) that relies on a server or VM for processing. Often used in enterprise VDI (Virtual Desktop Infrastructure).
- **Zero Client:** Even more minimal than thin; has no OS or storage, just enough to connect to server-hosted desktop.

Domain 5: Hardware and Network Troubleshooting (28%)

Troubleshooting Steps:

1. Identify problem
2. Establish theory
3. Test theory
4. Plan & implement
5. Verify functionality
6. Document

PC Issues:

- No POST – RAM or CPU issue
- Beep codes – refer to BIOS
- No power – PSU, connections
- Overheat – bad fan, thermal paste
- Random reboots – PSU, RAM

Display Issues:

- No signal – cable, GPU
- Dim screen – inverter (older LCD), backlight
- Artifacts – GPU problem
- Dead pixels – display issue

Printer Problems:

- Streaks – dirty drum or fuser
- Ghosting – bad fuser
- Blank pages – empty toner
- Paper jams – rollers, path obstruction

Network Issues:

- APIPA (169.254.x.x) – DHCP fail
- Cannot access website by name – DNS issue
- Slow – interference, cabling, congestion
- Ping fails – firewall, wrong IP
- Loopback plug – test NIC
- Patch cable test – cable tester

Terms and Definitions

Mobile Device Terms

Term	Definition
SODIMM	Small Outline DIMM; laptop-sized memory module
Digitizer	Touch input layer over display (capacitive/resistive)
Docking Station	Expands connectivity (video, USB, power)
Port Replicator	Adds ports but no power/docking functionality
Hotspot	Phone acting as mobile router
Tethering	Sharing internet via USB/Bluetooth

Networking Terms

Term	Definition
DHCP	Dynamically assigns IP, subnet, gateway, DNS
DNS	Resolves domain names to IP addresses
NAT	Translates private IPs to public
SSID	Name of a wireless network
MAC address	Unique hardware address (Layer 2)
APIPA	169.254.x.x address when DHCP fails
Latency	Time delay in data transmission
Bandwidth	Max data rate of a connection
Throughput	Actual achieved data rate

Hardware Terms

Term	Definition
DIMM	Standard desktop memory module
ECC RAM	Error-correcting memory (used in servers)
RAID	Redundant Array of Independent Disks; fault-tolerant storage setup
Form factor	Physical size/shape of hardware (e.g., ATX, microATX)
PSU	Power supply unit; converts AC to DC
CMOS battery	Powers BIOS settings and system clock
Thermal paste	Compound between CPU and heatsink to aid heat transfer

Cabling and Connectors

Term	Definition
RJ-45	8-pin connector for Ethernet
RJ-11	4- or 6-pin phone line connector
HDMI	Audio/video digital interface
DisplayPort	High-res video interface (PC)
SATA	Storage drive data interface
Molex	Legacy 4-pin power connector
Thunderbolt	High-speed interface via USB-C or Mini DisplayPort
USB-C	Reversible USB connector; supports data, power, video

Printer Terms

Term	Definition
Duplexing	Printing on both sides of the paper
Collate	Grouping multi-page copies in order
Toner	Dry powder used in laser printers
Fuser	Melts toner onto paper in laser printers
Printhead	Ink delivery mechanism in inkjets
Impact printer	Dot-matrix; uses ribbon and pins

Virtualization and Cloud Terms

Term	Definition
Hypervisor	Software managing VMs (Type 1 or 2)
Snapshot	Save state of a VM for rollback
IaaS	Infrastructure as a Service – full control of virtual machines
PaaS	Platform as a Service – develop/deploy apps
SaaS	Software as a Service – use the app, no backend access
Resource pooling	Shared cloud resources for multiple customers
Elasticity	Auto-scale up/down cloud resources