Cheat Sheet for comprehensive CompTIA A+

Hardware

Motherboard Components
- **CPU Socket**: Holds the CPU. Types: LGA, PGA, BGA.

- **RAM Slots**: Holds RAM modules. Types: DDR3, DDR4, DDR5.

- **PCIe Slots**: For expansion cards. Types: PCIe x1, x4, x8, x16.

- **SATA Ports**: For storage devices. Types: SATA 3.0 (6 Gbps).

- **M.2 Slots**: For NVMe SSDs. Key types: B, M, B+M.

Power Supply Units (PSUs)
- **Wattage**: 450W, 550W, 650W, 750W, 1000W.

- **Efficiency**: 80 PLUS (Bronze, Silver, Gold, Platinum, Titanium).

- **Cables**: Modular, Semi-Modular, Non-Modular.

Storage Devices
- **HDD**: 7200 RPM, 5400 RPM.

- **SSD**: SATA, NVMe.

- **Optical Drives**: CD/DVD/Blu-ray.

Cooling Solutions
- **Air Coolers**: Tower, Cylinder.

- **Liquid Cooling**: AIO (All-in-One), Custom Loop.

- **Fans**: Size: 80mm, 92mm, 120mm, 140mm.

Networking

Network Topologies
- **Star**: Central hub, easy to manage.

- **Bus**: Single backbone, prone to failure.

- **Ring**: Data flows in one direction, balanced.

- **Mesh**: Multiple paths, high redundancy.

- **Router**: Connects networks, NAT, firewall.

- **Switch**: Connects devices, VLANs.

- **Hub**: Connects devices, broadcasts.

- **Access Point**: Wireless connectivity.

IP Addressing
- **IPv4**: 192.168.1.1/24.

- **IPv6**: 2001:0db8:85a3:0000:0000:8a2e:0370:7334.

- **Subnet Mask**: 255.255.255.0.

- **CIDR Notation**: /24.

Operating Systems

Windows
- **File Systems**: NTFS, FAT32, exFAT.

- **Disk Management**: Diskpart, Disk Management Tool.

- **Task Manager**: Ctrl+Shift+Esc.

- **Command Prompt**: ipconfig, ping, netstat.

macOS
- **File Systems**: APFS, HFS+.

- **Disk Utility**: Repair, Partition.

- **Activity Monitor**: CPU, Memory, Disk, Network.

- **Terminal**: ifconfig, ping, netstat.

Linux
- **File Systems**: ext4, XFS, Btrfs.

- **Package Managers**: apt, yum, dnf.

- **Terminal Commands**: ls, cd, mkdir, rm.

- **System Monitoring**: top, htop, free.

Security

Authentication Methods
- **Password**: Alphanumeric, Complexity.

- **Biometrics**: Fingerprint, Facial Recognition.

- **Multi-Factor Authentication (MFA)**: SMS, Authenticator App.

Encryption
- **Full Disk Encryption**: BitLocker, FileVault.

- **File Encryption**: VeraCrypt, GPG.

- **SSL/TLS**: HTTPS, Secure Communication.

Firewalls
- **Software Firewalls**: Windows Firewall, macOS Firewall.

- **Hardware Firewalls**: Router Firewall.

- **Rules**: Allow, Deny, Logging.

Troubleshooting

General Steps
1. **Identify the Problem**: Symptoms, Error Messages.

2. **Gather Information**: Logs, System Reports.

3. **Isolate the Cause**: Hardware, Software, Network.

4. **Test Solutions**: Safe Mode, Diagnostic Tools.

5. **Implement Fix**: Update, Replace, Reinstall.

6. **Verify Resolution**: Test, Monitor.

Common Issues
- **Blue Screen of Death (BSOD)**: Check Event Viewer, Update Drivers.

- **Network Connectivity**: Ping, Traceroute, Check Cables.

- **Slow Performance**: Disk Cleanup, Defragment, Update Drivers.

Virtualization

Hypervisors

- **Type 1**: Runs on bare metal (ESXi, Hyper-V).

- **Type 2**: Runs on OS (VirtualBox, VMware Workstation).

Virtual Machines (VMs)

- **Creation**: Templates, Cloning.

- **Snapshots**: Backup, Rollback.

- **Networking**: Bridged, NAT, Host-Only.

Mobile Devices

iOS

- **Settings**: Wi-Fi, Bluetooth, Cellular.

- **Diagnostics**: Settings > Privacy > Analytics & Improvements.

- **Backup**: iCloud, iTunes.

Android

- **Settings**: Wi-Fi, Bluetooth, Mobile Data.

- **Diagnostics**: Developer Options, Battery Stats.

- **Backup**: Google Drive, Factory Reset.

Printers

Types

- **Inkjet**: Color, Photo Printing.

- **Laser**: High-speed, Monochrome/Color.

- **Thermal**: Receipts, Labels.

- **Dot Matrix**: Impact Printing.

Troubleshooting

- **Paper Jam**: Check Manual, Clear Path.

- **Low Ink/Toner**: Replace Cartridge.

- **Driver Issues**: Reinstall Driver, Update Firmware.

Safety and Environmental Concerns

Safety

- **Static Protection**: ESD Bracelet, Anti-Static Mat.

- **Electrical Safety**: Unplug, Use Surge Protector.

- **Lifting Techniques**: Bend Knees, Lift with Legs.

Environmental

- **E-Waste**: Recycle, Proper Disposal.

- **Energy Efficiency**: Power Management, Energy Star.

- **Proper Ventilation**: Clean Fans, Adequate Space.

Professionalism and Communication

Communication

- **Active Listening**: Acknowledge, Clarify, Summarize.

- **Documentation**: Logs, Reports, Ticketing Systems.

- **Professionalism**: Punctuality, Respect, Confidentiality.

Customer Service

- **Empathy**: Understand, Sympathize.

- **Resolution**: Provide Options, Follow Up.

- **Feedback**: Collect, Analyze, Improve.

Tools and Utilities

Diagnostic Tools

- **Multimeter**: Voltage, Continuity.

- **Network Analyzer**: Wireshark, tcpdump.

- **System Monitors**: HWMonitor, CPU-Z.

Software Utilities

- **Disk Cloning**: Clonezilla, Acronis True Image.

- **Backup Solutions**: Time Machine, Windows Backup.

- **System Restore**: Windows Recovery, macOS Recovery.

Conclusion

- **Continuous Learning**: Stay updated with new technologies.

- **Practice**: Hands-on experience, labs, simulations.

- **Community**: Forums, User Groups, Certifications.

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