

# CompTIA A+ Practical Application Edition

- **Course Number:** 220-702
- **Length:** 5 Day(s)

## Certification Exam

This course is preparation for the CompTIA A+ Practical Application Certification exam

## Course Overview

CompTIA A+ Practical Application is an extension of the knowledge and skills identified in CompTIA A+ Essentials, with more of a "hands-on" orientation focused on scenarios in which troubleshooting and tools must be applied to resolve problems.

## Prerequisites/Audience

This course is intended for new information technology (IT) professionals, and existing CompTIA A+ certified professionals who are looking to remain current on their certifications. Before attending this course, students are not required but encouraged to complete:

- CompTIA A+ Essentials

## Course Outline

### Course Introduction

Course Introduction

### Module 01 - Power Systems

Power Systems

Characteristics

Characteristics, continued

Alternating and Direct Current

Characteristics, continued 2

PC Power Supply

Voltage Selection Switch

Live Demo - PC Power Supply

Live Demo - Voltage Selection Switch

Standard Outputs

Power Connectors

Peripheral Power Connector

Floppy Power Connector

SATA Power Connector

Wire Colors

Live Demo - Wire Colors

Motherboard Power Connectors  
Static Electricity  
Preventing Static Buildup  
Preventing Static Discharge  
Safety Precautions  
Installing a Power Supply  
Selecting the Voltage  
An AC Signal  
Power Problems  
Power Conditioning  
UPS Software  
Electrical Measurements  
Using a Multimeter  
Other Measures  
Power Supply Problems  
The Power\_Good Signal  
Module 01 Review

## **Module 02 - CPUs and Motherboards**

CPUs and Motherboards  
Firmware  
CMOS  
CMOS Configuration  
CMOS Utility Access Examples  
BIOS Configuration Procedure  
BIOS  
CMOS Configuration, continued  
CMOS Configurable Settings  
CMOS Settings, continued  
Demo - Updating your PC's BIOS Settings  
Inside the Case  
Live Demo - Outside the Computer  
Live Demo - Inside the Computer  
Chipsets  
Northbridge and Southbridge  
Northbridge/Southbridge, continued  
CPU Packaging  
PGA Package  
SECC Package  
Packages  
Packages, continued  
Sockets and Slots  
Sockets and Slots, continued  
Pentium with MMX CPU and Socket 7 Socket  
CPU Performance

CPU Design Characteristics  
CPU Characteristics, continued  
Multiple-Processor Support  
Processor Specifications  
Cooling Techniques  
CPU Installation  
CPU Retaining Clips  
Installing a CPU  
Live Demo - Replacing a CPU  
Motherboards  
Motherboard Installation  
Installing a Motherboard  
The CMOS Battery  
Replacing CMOS Battery  
Live Demo - Replacing the CMOS Battery  
BIOS-Related Problems  
BIOS Updates  
Flashing the BIOS  
BIOS Update Guidelines  
Recovering from a Failed Update  
POST-Related Problems  
Beep Codes  
Numeric Codes  
Logo Screen  
The Boot Process  
The Boot Process, continued  
CMOS-Related Problems  
Motherboard and CPU Problems  
Module 02 Review

### **Module 03 - Memory Systems**

Memory Systems  
Memory  
Measuring Memory  
Larger Memory Units  
Memory Types  
Volatile vs. Non-Volatile Memory  
Dynamic vs. Static Memory  
Asynchronous vs. Synchronous  
Memory Installation Considerations  
Banking Requirements  
Proper Handling  
Inserting Memory Modules  
Removing a Module  
Package Types

Package Types: Desktops  
Package Types: Laptops  
Package Types: Printers  
Demo - Legacy Memory Modules  
Live Demo - Legacy Memory Modules  
Live Demo - New Memory Modules  
Notebook Memory  
Live Demo - Notebook Memory  
Shared Video Memory  
Memory in Handheld Computers  
Monitoring Memory Usage  
Demo - Monitoring Memory Usage  
Optimizing the Page File  
Demo - Changing the Size of the Windows Page File  
Memory Testing  
Memory-Related Problems  
Module 03 Review

#### **Module 04 - Expansion Cards**

Expansion Cards  
Buses  
Buses, continued  
VESA Local Bus  
Expansion Bus  
Expansion Bus Types  
PCI Bus Slots  
Video Bus  
An AGP Video Bus Slot  
The Riser Bus  
Three Riser Standards  
Live Demo - Identifying Graphics Connections  
System Interaction  
Interaction Mechanisms  
Interrupts  
Viewing Process  
Demo - Examining Running Processes  
Device Manager  
IRQs  
Device Manager: IRQs  
I/O Addresses  
Device Manager: I/O Addresses  
Base Memory Addresses  
Typical Base Memory Addresses  
Device Manager: Base Memory  
DMA Channels

Device Manager: DMA Channels  
Resource by Device Type  
Demo - Device Manager  
Safe Handling  
Drivers  
Installing an Expansion Card  
Installing an Expansion Card, continued  
Video Adapters  
Video Adapter Slot Types  
Live Demo - Installing a Video Adapter Card  
Sound Cards  
Installation of Sound Cards  
Updating Drivers  
Demo - Searching For and Installing Updated Drivers  
Video Card Problems  
Sound Card Problems  
Troubleshooting Serial Connections  
Troubleshooting Parallel Connections  
Troubleshooting PS/2 Connections  
Troubleshooting USB Connections  
Troubleshooting IEEE 1394 Connections  
Troubleshooting Wireless Connections  
Troubleshooting Multimedia Connections  
Loopback Plugs  
Module 04 Review

### **Module 05 - Data Storage Devices**

Data Storage Devices  
Physical Installation  
ATA Drive Identification  
SCSI Drive Identification  
Chassis Installation  
Data Cable Connections  
Power Cable Connections  
Solid-State Drives  
Solid-State Drive Advantages  
Magnetic Drive Advantages  
Hard Drive Connections  
Drive Preparation Steps  
Low-Level Formatting  
Partitioning  
Partition Types  
Partitioning Utilities  
Formatting  
File Systems

FAT File System  
NTFS File System  
FAT vs. NTFS  
Disk Management  
Fault Tolerance  
RAID Levels  
RAID Levels, continued  
Choosing a RAID Level  
Striped Volumes  
Mirrored Volume  
RAID-5  
RAID-5, continued  
Software and Hardware RAID  
Hardware RAID Advantages  
Demo - Exploring Fault Tolerance  
CD Drive Components  
Live Demo - CD Drive Components  
Other CD Drive Components  
CD Drive Speeds  
DVD Drives  
DVD Types  
Blu-Ray Drives  
Optical Drive Installation  
Optical Drive Connections  
Drivers  
USB Flash Drives  
USB Flash Drives, continued  
Hot-Swapping  
Live Demo - Hot-Swapping  
Booting From Flash Drive  
Floppy Controller Resources  
Floppy Drive Cable  
Floppy Drive Cable, continued  
Floppy Controller Connectors  
File Organization Problems  
Defragging  
Defrag.exe  
Demo - Running defrag.exe  
Checking a Disk for Errors  
Chkdsk  
Demo - Running chkdsk.exe  
Recovering Disk Space  
Demo - Using Disk Cleanup  
Recovering Deleted Files  
Third-Party Diagnostic Utilities

Troubleshooting Hard and Floppy Drives  
Troubleshooting CD Drives  
Troubleshooting DVD and Blu-Ray Drives  
Troubleshooting External/Removable Drives  
Module 05 Review

### **Module 06 - Printers and Scanners**

Printers and Scanners  
Printer Maintenance  
An Inkjet Printer  
Inkjet Cartridge Print Heads  
Inkjet Printers  
Laser Printer  
Live Demo - Performing Printer Maintenance Tasks  
Consumables  
Demo - Install Local Printer / Optimize Printing / Browse Printer Properties  
Scanner Maintenance  
Printer Troubleshooting  
Testing the Application  
Testing the Printer  
Operating System and Drivers 1  
Connections  
Connections, continued  
Dark Images  
Light or Weak Images  
Repetitive Image Defects  
Ghosting and Shadows  
Smearing  
Banding  
Focus  
Voided Areas  
Registration, Jitters, Skew  
Misaligned Color Registration  
Weak Color, Missing Color  
Vertical and Horizontal Lines  
Black or Blank Pages  
Transport/Feed Issues  
Transport/Feed Causes  
Scanner Troubleshooting  
Application  
Operating System and Drivers 2  
Scanner Connections  
Image Quality Issues  
Faxing Issues  
Module 06 Review

## **Module 07 - Mobile Computing**

Mobile Computing  
Windows Mobility Center  
Power-Saving Modes  
Power Lights  
Power Plans (Vista)  
Demo - Configuring Power Settings  
Sleeping and Hibernating Notebooks  
Replacing Components  
Hot-Swappable Components  
PC Card Types  
Type II PC Card  
Live Demo - Using PC Cards  
Bus Connections  
Card and Socket Services  
Safely Remove Hardware  
Non-Hot-Swappable Components  
Mini PCI Card  
Upgrading Memory  
Drives  
Network Adapters and Modems  
Other Components That May Need To Be Replaced  
Peripherals  
Notebook Computer Issues  
Display Issues  
Notebook Computer Issues, continued  
Troubleshooting Power Problems  
Power Issues with Handhelds  
Module 07 Review

## **Module 08 - Windows Management**

Windows Management  
The Command-Line Utility  
Directory Structures  
Windows Default File Structure  
Navigation  
Command (cmd)  
Dir  
/a:attributes  
/o:sortorder  
Wildcard Characters  
Chdir (cd)  
Windows Explorer  
Help

Demo - Command Prompt  
Demo - Navigating a Directory Tree  
Creating Directories 1  
Spaces in Commands  
Demo - Creating Directories  
Copying Directories 1  
Copy  
Xcopy  
Copying in Windows Explorer  
Windows Explorer in Vista  
Windows Explorer in XP  
Directory Structure  
Navigating Directories  
Creating Directories 2  
Copying Directories 2  
Removing Directories  
Demo - Copying a Directory and Its Contents  
Removing Directories, continued  
Demo - Removing Directories  
Creating Text Files  
Creating a Text File with Edit  
Creating a Text File in Notepad  
Editing Text Files  
Editing a Text File with Edit  
Editing a Text File in Notepad  
Demo - Create and Edit Text file  
Volume Mounting  
Demo - Mounting a Volume  
Services  
The Services Console  
Service Properties  
The Net Command  
Demo - Using the Net Command  
Demo - Observing the Startup Program Group  
Regional and Language Settings  
Demo - Exploring Regional and Language Settings  
Indexing  
Technical Requirements  
Personalization Settings  
Windows Aero  
Windows Aero Features  
3D Windows Flip  
The Sidebar with Gadgets  
The Gadget Gallery  
Gadget Settings

Remote Assistance  
Remote Desktop  
Connecting to Remote Desktop  
Demo - Making a Remote Desktop Connection  
Module 08 Review

### **Module 09 - Windows Maintenance**

Windows Maintenance  
Resource Overview  
Performance Monitor  
Performance Objects  
Bottlenecks  
Demo - Monitoring Performance  
Configuring Performance Monitor  
Demo - Customizing Performance Monitor  
Reliability Monitor  
Task Manager  
Task Manager Tabs  
Task Manager in Windows Vista  
The Applications Tab  
Demo - Monitoring Applications  
The Processes Tab  
The Networking Tab  
The Users Tab  
Windows Diagnostics 1  
Event Viewer  
Windows Logs  
Event Information  
Event Types  
An Event Properties Dialog Box  
Demo - Viewing the Event Logs  
Sorting Events  
Filtering Events  
Backups  
Backup and Restore Center  
Backup Modes  
Backup Types in Windows XP  
Windows Backup in Windows Vista  
Restoring Files  
System Restore  
Restoring a System  
Task Scheduler  
Demo - Creating a Basic Task  
Computer Startup Problems  
Boot Errors

Boot Errors, continued

Startup Errors

Startup Errors, continued

Operating System Load Errors

OS Load Errors, continued

Advanced Boot Options Menu

Demo - Booting the Computer Using Advanced Startup Options

The System Configuration Utility

Three Startup Modes

Demo - Using the System Configuration Utility

Windows Diagnostics 2

The System Information Window

Remote PC's System Information

The ver Command

System File Checker

Module 09 Review

## **Module 10 - SOHO Networking**

SOHO Networking

Network Connection Types

POTS/PSTN

ISDN

DSL

Cable

Cable, continued

Satellite

Satellite, continued

Wireless

Cellular

3G Networks

4G Networks

Bluetooth

NAT

Firewalls and Proxies

Ethernet

Ethernet Mediums

Ethernet Standards

Ethernet Standards, continued

Wireless Connection Components

Wireless NICs

Wireless Access Points

Wireless Speeds

WAP Placement  
802.11 Standard  
802.11 WLAN Standards  
Network Protocol  
Wireless Protocols  
Demo - Install Network Protocol  
WLAN Security Risks  
Additional Risks  
WLAN Security Components  
WLAN Security, continued  
Transmission Encryption  
802.1x Authentication  
WP Configuration  
Securing your AP  
Securing your AP, continued  
Demo - Configuring a Wireless Access Point  
Wireless Clients  
Wireless Auto Configuration  
Auto Configuration, continued  
Windows CE Wireless Clients  
Demo - Configuring a Wireless Client  
Module 10 Review

### **Module 11 - Network Troubleshooting**

Network Troubleshooting  
Hardware Toolkit  
Additional Tools  
Software Toolkit  
Live Demo - Identifying Common Toolkit Components  
Troubleshooting Wired Connections  
Cable Testing Devices  
Physical Cable Tests  
Network Analyzer  
Network Optimization  
Troubleshooting Wireless  
Common Problems  
TCP/IP Utilities  
IPConfig  
Demo - Examining Addresses IPConfig / All  
Ping  
Demo - Ping  
Troubleshooting with Ping  
Demo - Testing TCP/IP Connectivity  
NSLookup and Tracert  
Demo - Using NSLookup and Tracert

Port Addresses  
Service Port Numbers  
Demo - Using Port Numbers  
Other Client Connection Issues  
Windows Network Diagnostics  
Demo - Troubleshooting with Windows Network Diagnostics  
Module 11 Review

## **Module 12 - Security**

Security  
Causes of Compromised Security  
Technology Weaknesses  
Configuration Weaknesses  
Human Error and Malice  
Social Engineering  
Dumpster Diving  
Online Attacks  
Social Engineering Countermeasures  
Viruses, Worms, Trojan Horses  
Worms  
Trojan Horses  
Antivirus Software  
Spyware  
Spybot Search and Destroy  
Configuring Windows Defender  
Blocking, Disabling, Removing  
Getting the BIOS Version  
Updating the BIOS  
User Account  
Privileges  
Manage Accounts  
Creating a User Account  
Demo - Creating Local User Accounts  
Password Rules  
Password Recommendations  
Creating a User Password  
The Password Creation Screen  
Requiring a New Password  
Disabling an Account  
User Account Control  
Elevation Prompts  
Tasks Needing Admin. Privileges  
UAC Configuration  
Demo - Configuring UAC  
File System Security

Sources of “Access Denied” Errors  
Moving vs. Copying  
File Attributes  
Effective Permissions Tool  
Shared Folders Console  
Reviewing Share Permissions  
Calculating Effective Permissions  
Demo - Determining Effective Permissions  
Windows Security Center  
Security Center, continued  
Windows Firewall  
Demo - Displaying the Status of Windows Firewall  
Configuring Windows Firewall  
Demo - Creating Firewall Exceptions  
Folder Encryption  
Comparing BitLocker and EFS  
BitLocker Hardware Requirements  
Demo - Encrypting a Folder  
Module 12 Review  
Course Closure

**Total Duration: 18h 16m**