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Emmett Dulaney and Troy McMillan



# COMPLETE REVIEW GUIDE

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EXAM 220-801  
EXAM 220-802



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Best regards



Neil Edde  
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*For Jim and Linda: thank you for always being there.*

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*—Emmett Dulaney*

*For my dear father, who has always supported me no matter what.*

*—Troy McMillan*

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—*Troy McMillan*



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# Introduction

The A+ certification program was developed by the Computing Technology Industry Association (CompTIA) to provide an industry-wide means of certifying the competency of computer service technicians. The A+ certification, which is granted to those who have attained the level of knowledge and troubleshooting skills that are needed to provide capable support in the field of personal computers, is similar to other certifications in the computer industry. The theory behind these certifications is that if you needed to have service performed on any of their products, you would sooner call a technician who has been certified in one of the appropriate programs than you would just call the first so-called “expert” in the phone book.

CompTIA’s A+ exam objectives are periodically updated to keep the certification applicable to the most recent hardware and software. This is necessary because a technician must be able to work on the latest equipment. The most recent revisions to the objectives—and to the whole program—were introduced in 2012 and are reflected in this book.

This book and the Sybex *CompTIA A+ Complete Study Guide* (both the Standard and Deluxe Editions) are tools to help you prepare for this certification—and for the new areas of focus of a modern computer technician’s job.

## What Is A+ Certification?

The A+ certification program was created to offer a wide-ranging certification, in the sense that it’s intended to certify competence with personal computers from many different makers and vendors. Everyone must take and pass two exams: 220-801 and 220-802.



Note that for the new exams, CompTIA did away with the user-friendly naming that existed with previous editions: Essentials and Practical Applications.

You don’t have to take the 220-801 exam and the 220-802 exam at the same time. However, the A+ certification isn’t awarded until you’ve passed both tests.

For the latest pricing on the exams and updates to the registration procedures, call Pearson VUE at (877) 551-7587. You can also go to [www.pearsonvue.com](http://www.pearsonvue.com) for additional information or to register online. If you have further questions about the scope of the exams or related CompTIA programs, refer to the CompTIA website at [www.comptia.org](http://www.comptia.org).

## Who Should Buy This Book?

If you want to acquire a solid foundation in personal computer basics, and your goal is to prepare for the exams by filling in any gaps in your knowledge, this book is for you. You’ll find clear explanations of the concepts you need to grasp and plenty of help to achieve the high level of professional competency you need in order to succeed in your chosen field.

If you want to become certified as an A+ holder, this book is definitely what you need. However, if you just want to attempt to pass the exam without really understanding the basics of personal

computers, this guide isn't for you. It's written for people who want to acquire skills and knowledge of PC basics.

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## How to Use This Book and the Companion Website

We've included several testing features in the book and on the companion website. These tools will help you retain vital exam content as well as prepare to sit for the actual exams:

**Chapter Review Questions** To test your knowledge as you progress through the book, there are review questions at the end of each chapter. As you finish each chapter, answer the review questions and then check your answers—the correct answers appear in Appendix A. You can go back to reread the section that deals with each question you got wrong to ensure that you answer correctly the next time you're tested on the material.



Instructions on how to download the electronic flashcards and the bonus practice exams can be found at [www.sybex.com/go/aplusrg2e](http://www.sybex.com/go/aplusrg2e).

**Electronic Flashcards** We've provided electronic flashcard for on-the-go review. These are short questions and answers, just like the flashcards you probably used to study in school.

**Test Engine** We've also included the Sybex Test Engine. Using this custom test engine, you can identify weak areas up front and then develop a solid studying strategy using each of these robust testing features. Our thorough readme file will walk you through the quick, easy installation process. There are a total of four practice exams: two for exam 220-801 and two for 220-802. Take these practice exams just as if you were taking the actual exam (without any reference material). When you've finished the first exam, move on to the next one to solidify your test-taking skills. If you get more than 90 percent of the answers correct, you're ready to take the certification exams.

**Glossary of Terms in PDF** From the companion website, we have included a very useful glossary of terms in PDF format so you can easily read it on any computer. If you have to travel and brush up on any key terms, you can do so with this useful resource.

## Tips for Taking the A+ Exams

Here are some general tips for taking your exams successfully:

- Bring two forms of ID with you. One must be a photo ID, such as a driver's license. The other can be a major credit card or a passport. Both forms must include a signature.
- Arrive early at the exam center so you can relax and review your study materials, particularly tables and lists of exam-related information.
- Read the questions carefully. Don't be tempted to jump to an early conclusion. Make sure you know exactly what the question is asking.
- Don't leave any unanswered questions. Unanswered questions are scored against you.
- There will be questions with multiple correct responses. When there is more than one correct answer, a message at the bottom of the screen will prompt you to either "Choose two." or "Choose

all that apply.” Be sure to read the messages displayed to know how many correct answers you must choose.

- When answering multiple-choice questions you’re not sure about, use a process of elimination to get rid of the obviously incorrect answers first. Doing so will improve your odds if you need to make an educated guess.
- On form-based tests (nonadaptive), because the hard questions will eat up the most time, save them for last. You can move forward and backward through the exam.
- For the latest pricing on the exams and updates to the registration procedures, visit CompTIA’s website at [www.comptia.org](http://www.comptia.org).

### Performance-Based Questions

CompTIA has begun to include performance-based questions on their exams. These differ from the traditional multiple-choice questions in that the candidate is expected to perform a task or series of tasks. Don’t be surprised if on the exams you are presented with a scenario and asked to complete a task.

## Exam Objectives

CompTIA goes to great lengths to ensure that its certification programs accurately reflect the IT industry’s best practices. The company does this by establishing Cornerstone Committees for each of its exam programs. Each committee consist of a small group of IT professionals, training providers, and publishers who are responsible for establishing the exam’s baseline competency level and who determine the appropriate target audience level.

Once these factors are determined, CompTIA shares this information with a group of hand-selected Subject Matter Experts (SMEs). These folks are the true brainpower behind the certification program. They review the committee’s findings, refine them, and shape them into the objectives you see before you. CompTIA calls this process a Job Task Analysis (JTA).

Finally, CompTIA conducts a survey to ensure that the objectives and weightings truly reflect the job requirements. Only then can the SMEs go to work writing the hundreds of questions needed for the exam. And, in many cases, they have to go back to the drawing board for further refinements before the exam is ready to go live in its final state. So, rest assured, the content you’re about to learn will serve you long after you take the exam.



Exam objectives are subject to change at any time without prior notice and at CompTIA’s sole discretion. Please visit the certification page of CompTIA’s website at [www.comptia.org](http://www.comptia.org) for the most current listing of exam objectives.

CompTIA also publishes relative weightings for each of the exam’s objectives. The following tables list the objective domains and the extent to which they’re represented on each exam. For example, on the 220-801 exam expect to spend more time answering questions that pertain to PC hardware than to printers.

<b>220-801 Exam Domains</b>	<b>% of Exam</b>
1.0 PC Hardware	40%
2.0 Networking	27%
3.0 Laptops	11%
4.0 Printers	11%
5.0 Operational Procedures	11%
<b>Total</b>	<b>100%</b>

<b>220-802 Exam Domains</b>	<b>% of Exam</b>
1.0 Operating Systems	33%
2.0 Security	22%
3.0 Mobile Devices	9%
4.0 Troubleshooting	36%
<b>Total</b>	<b>100%</b>

The following sections look at the objectives beneath each of these in more detail.

## **CompTIA 220-801 Exam Objectives**

### **1.0 PC Hardware**

#### **1.1 Configure and apply BIOS settings.**

- Install firmware upgrades – flash BIOS
- BIOS component information
  - RAM
  - Hard drive
  - Optical drive
  - CPU
- BIOS configurations
  - Boot sequence
  - Enabling and disabling devices
  - Date/time
  - Clock speeds
  - Virtualization support
  - BIOS security (passwords, drive encryption: TPM, lo-jack)
- Use built-in diagnostics
- Monitoring
  - Temperature monitoring

- Fan speeds

- 
- Intrusion detection/notification

- Voltage

- Clock

- Bus speed

1.2 Differentiate between motherboard components, their purposes, and properties.

- Sizes

- ATX

- Micro-ATX

- ILX

- Expansion Slots

- PCI

- PCI-X

- PCIe

- miniPCI

- CNR

- AGP2x, 4x, 8x

- RAM slots

- CPU sockets

- Chipsets

- North Bridge

- South Bridge

- CMOS battery

- Jumpers

- Power connections and types

- Fan connectors

- Front panel connectors

- USB

- Audio

- Power button

- Power light

- Drive activity lights

- Reset button

- Bus speeds
- 

### 1.3 Compare and contrast RAM types and features.

- Types
  - DDR
  - DDR2
  - DDR3
  - SDRAM
  - SODIMM
  - RAMBUS
  - DIMM
  - Parity vs. non-parity
  - ECC vs. non-ECC
  - RAM configurations
    - Single channel vs. dual channel vs. triple channel
    - Single sided vs. double sided
- RAM compatibility and speed

### 1.4 Install and configure expansion cards.

- Sound cards
- Video cards
- Network cards
- Serial and parallel cards
- USB cards
- FireWire cards
- Storage cards
- Modem cards
- Wireless/cellular cards
- TV tuner cards
- Video capture cards
- Riser cards

### 1.5 Install and configure storage devices and use appropriate media.

- Optical drives
  - CD-ROM
  - DVD-ROM

- Blu-Ray
- 
- Combo drives and burners
    - CD-RW
    - DVD-RW
    - Dual Layer DVD-RW
    - BD-R
    - BD-RE
  - Connection Types
    - External
      - USB
      - FireWire
      - eSATA
      - Ethernet
    - Internal SATA, IDE and SCSI
      - IDE configuration and setup (Master, Slave, Cable Select)
      - SCSI IDs (0-15)
  - Hot swappable drives
  - Hard drives
    - Magnetic
    - 5400 rpm
    - 7200 rpm
    - 10,000 rpm
    - 15,000 rpm
  - Solid state/flash drives
    - Compact flash
    - SD
    - Micro-SD
    - Mini-SD
    - xD
    - SSD
  - RAID Types
    - 0
    - 1



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