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# **A+ Certification Bible**



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**Ed Tetz, Glen E. Clarke, Joseph Phillips,  
Angshuman Chakraborti, Meeta Gupta,  
Mridula Parihar, Rashim Mogha**



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*I would like to dedicate this book to my wife, Sharon, and my children, Emily and Mackenzie. They have put up with a lot during the writing of this book, especially the loss of my time, which is now gone forever. — Ed*

*This book is dedicated to my beautiful wife, Tanya, who has shown amazing support throughout the long nights and early mornings of this book. If it were not for your love and understanding, I would not have had the inspiration to write. — Glen*

*This book is dedicated to my many friends: Mary Jane, Don, Mick, Linda Linda, Mark and Antonietta of Il Gargona, Kenny, Greg, Stacey, Mary, Nancy, Derek, Jason, Lila, and so many others. Thank you all for your friendship. — Joe*

# Preface

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**W**elcome to the A+ Certification Bible. This book is intended to help people who are interested in pursuing their A+ Certification. It covers material that will be found on both of the required A+ Certification Exams (A+ Core Hardware Exam and A+ OS Technologies Exam). The layout of this book has been designed to make the material easy to digest and navigate. We hope that you enjoy your experience with this book.

Once you have attained your A+ Certification, you may want to pursue another major industry certification, such as CompTIA's Network+, CompTIA's Server+, CompTIA's Linux+, Microsoft's MCSE, Novell's CNE, or Cisco's CCNA. Any of these certifications will make you more valuable to your current employer or future employers. Good luck on your path to certification.

## Who Should Read this Book?

This book is designed as a study aid for people who plan to write their A+ certification exams from CompTIA. If you are interested in the A+ certification, this book is the only study guide that you will need. And because it provides more detailed information than is required for the exam, it can be used as a reference at a later date.

## What is CompTIA?

CompTIA (Computer Technology Industry Association) is an association whose members come from all areas of the computing industry. It has corporate memberships, which include more than 10,000 companies; the IT professionals in its membership come from more than 50 countries. Its main goal is to act as a unifying force to create vendor neutral certifications. You can find more information about CompTIA at <http://www.comptia.org>.

## What is A+?

From 1999 to 2000, CompTIA saw a 40 percent increase in the number of people taking the A+ certification exam. Over 116,000 people passed this certification in 2000, bringing the number of certified professionals to over 260,000. The A+ certification is clearly one of the fastest growing certifications in the industry.

## Structure of this Book

This book is broken down into eight parts. Each part focuses on a different set of components from either the A+ Core Hardware exam or the A+ OS Technologies exam. The only exception to this rule is Part VII, which covers the networking components from both exams.

### **Part I: A+ Core Hardware Exam – Hardware Basics**

Part I covers the basics of all the hardware components that make up your computer. The first chapter provides an overview of some of the basic components that will then be examined in subsequent chapters. Components that will be examined include: CPUs, motherboards, RAM, CMOS, ports, cables, and printers. Part I concludes with a review of major system resources, such as IRQs, that are used by the major types of devices.

### **Part II: A+ Core Hardware Exam – Installing and Configuring Hardware**

Part II focuses on installation of various devices. It includes an examination of internal hard drives, modems, USB peripherals, FireWire, and components that are included in portable devices.

### **Part III: A+ Core Hardware Exam – Maintenance and Troubleshooting**

Part III provides information about maintaining computer devices, including preventive maintenance and safety procedures, how to handle and care for computer components, and maintenance specifically related to printers. Part III ends with a chapter that covers basic troubleshooting of each of the major components that make up your computer.

### **Part IV: A+ Operating System (OS) Technologies Exam – Operating System Basics**

Part IV introduces the different operating systems, providing a comparison of Windows 9x systems and Windows 2000, a description of different commands that can be used from command prompt, and a discussion of graphical operating systems that carry out major system functions. These system functions include routing disk maintenance procedures. Part IV also discusses memory management and configuration for MS-DOS and Windows 9x.

## Part V: A+ Operating System (OS) Technologies Exam – Installing and Configuring Operating Systems

Part V of the book discusses how to get the OS going. It includes chapters on installing and upgrading Windows, how to control the boot process, and how to work with devices and applications. When working with applications, the differences between 16-bit, 32-bit and MS-DOS based applications are discussed.

## Part VI: A+ Operating System (OS) Technologies Exam – Troubleshooting Operating Systems

The focus of Part VI is how to troubleshoot problems from the OS perspective. This part examines different tools that can be used to troubleshoot aspects of your operating system and common problems that may arise in day-to-day use of the operating system. Since many computer problems arise from viruses, there is a section that deals with defining and dealing with viruses.

## Part VII: A+ Exams – Networking

Part VII deals with networking. An overview of underlying network hardware — including cabling, network cards, and protocols — is provided, as well as a discussion about networking from the OS level and Internet access methods.

## Appendixes

This book has four appendixes. The appendixes include a description of what is found on the accompanying CD-ROM, an objective mapping table to let you know which chapters cover which exam objectives, a sample exam, and some exam-taking tips.

## Chapter Structure

Each chapter in this book follows a common structure:

- ◆ **Objectives:** A bulleted list that states the specific exam objectives that will be covered in the chapter.
- ◆ **Pre-Test:** A short test that assesses your knowledge of the material in the chapter. The pre-test questions will help you identify areas to focus on.
- ◆ **The body of the chapter** follows the Pre-Test.
- ◆ **Key Point Summary:** A summary of the crucial facts in the chapter.

- ◆ **Study Guide:** The study guide in each chapter contains some or all of the following elements.
- **Assessment Questions:** Multiple-choice questions, similar to the ones you will see on the exam, that test your knowledge of material presented in the chapter.
  - **Scenarios:** Exercises that require you to apply your critical thinking skills and understanding of the chapter material to solve a hypothetical problem.
  - **Labs:** Hands-on or paper-based exercises that follow a step-by-step approach. Labs are designed to help you solidify the material that is in the chapter.
  - **Answers** to Pre-Test questions, Assessment Questions, Scenarios, and Labs.

## Icons Used in this Book

In order to draw attention to content in the chapter, a number of icons are used. These icons and their uses include the following:



This icon is used when there is something that is discussed or being done in a lab that could have serious consequences to you or your computer.



This icon is used to reference information that is found elsewhere in the book.



This icon is used to provide tips that may help you in the exam. It may also be used to stress points that are important to the exam.



This icon is used to deliver material that discusses practices that are opposite to those presented in the study material and the exam.



This icon denotes test objectives that are to be covered in a section.



This icon is used for tips or facts that are worth noting, but are not related specifically to the exam.

## Exam Components

The A+ Certification exams can be scheduled at Vue or Prometric testing centers. For more information about scheduling your exam, check the Testing Locations page on CompTIA's Web site at [http://www.comptia.org/certification/test\\_locations.htm](http://www.comptia.org/certification/test_locations.htm).

## Pricing

As of January 1, 2001, the cost of taking the A+ exams is \$82 US per exam for corporate members and \$132 US per exam for non-members.

## What's on the exam?

The objectives for the A+ Core Hardware exam are found in Table 1, and the objectives for the A+ OS Technologies exam are found in Table 2.

**Table 1**  
**A+ Core Hardware Exam (220-201)**

<i>Domain</i>	<i>% of Examination</i>
1.0 Installation, Configuration and Upgrading	30%
2.0 Diagnosing and Troubleshooting	30%
3.0 Preventive Maintenance	5%
4.0 Motherboard/Processors/Memory	15%
5.0 Printers	10%
6.0 Basic Networking	10%
Total	100%

**Table 2**  
**A+ OS Technologies Exam (220-202)**

<i>Domain</i>	<i>% of Examination</i>
1.0 OS Fundamentals	30%
2.0 Installation, Configuration and Upgrading	15%
3.0 Diagnosing and Troubleshooting	40%
4.0 Networks	15%
Total	100%

## Passing scores

CompTIA uses a scale score to determine the total number of points that each question on the exam will be calculated out of. This scale score is between 100 and 900. In any case, the passing score (not a percentage due to the scale) is 683 or 76% for the A+ Core Hardware exam and 614 or 68% for the A+ OS Technologies exam. The scale score system allows the number of points assigned to questions to vary between each copy of the exam, which makes it harder for test candidates to compare scores across exams.

The revised exams for A+ were released January 31, 2001. Each exam contains 70 questions, and you will have 90 minutes to complete each exam. In the third quarter of 2001, the exams are scheduled to become adaptive. Adaptive exams ask a minimal number of questions (usually about 15), and then will ask additional questions based on any incorrect answers. Appendix D provides additional information about the differences between standard and adaptive exams.

# Acknowledgments

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First, I would like to thank Ed Tetz for getting me involved in this project. I would also like to thank the staff at Hungry Minds, Inc., especially Nancy Maragioglio, Acquisitions Editor, and Amanda Munz, Project Editor. You all have made this experience one of the most enjoyable of my career. — Glen

Many thanks to Nancy Maragioglio for asking me to write this book and for her guidance and support. Thanks also to Amanda Munz for her incredible patience and leadership, and to Ed Tetz and Glen Clarke for their hard work and late nights invested in this book. Many thanks to the technical editors, copy editors, and countless other individuals who've made this book a success — Joe



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