

Introduction

The Cisco Certified Network Associate (CCNA) accreditation has become the leading introductory-level network certification available today. The CCNA certification is recognized by employers as providing candidates with a solid foundation of Cisco networking concepts, terminology, and skills. The CCNA exam covers a broad range of networking concepts to prepare candidates for the technologies they are likely to work with in today's network environments.

This book is your one-stop shop. Everything you need to know to pass the exam is in here. You do not have to take a class in addition to buying this book to pass the exam. However, depending on your personal study habits or learning style, you might benefit from buying this book *and* taking a class. Taking a CCNA certification class gives you dedicated study time and precious hands-on experience with live Cisco equipment.

Exam Preps are meticulously crafted to give you the best possible learning experience for the particular characteristics of the technology covered and the actual certification exam. The instructional design implemented in the *Exam Preps* reflects the task- and experience-based nature of Cisco certification exams. The *Exam Preps* provide the factual knowledge base you need for the exams and then take it to the next level, with exercises and exam questions that are required in the CCNA certification.

Cisco has split the single CCNA test into two separate exams, ICND1 and ICND2. Although the single CCNA exam still remains, Cisco recommends that only those who are recertifying an existing CCNA certification take this exam. This *CCNA Exam Prep* title prepares you for both the ICND1 exam, which covers the foundational Cisco network concepts and configurations, and the ICND2 exam, which covers the more advanced network concepts and configurations. Personally, we recommend that you follow Cisco's advice on taking the two-exam path rather than the single CCNA exam. Although it may be tempting to go after the one-test "fast-track," this single exam is extremely difficult and has discouraged many potential CCNA candidates from continuing on their Cisco certification journey.

How This Book Helps You

This book takes you on a self-guided tour of all the areas covered by the CCNA exam and teaches you the specific skills you need to achieve your certification. This book also contains helpful hints, tips, real-world examples, and exercises, as well as references to additional study materials. Specifically, this book is set up to help you in the following ways:

- ▶ **Organization:** This book is organized by individual exam objectives. Every objective you need to know for the CCNA exam is covered in this book. It presents the objectives in an order as close as possible to that listed by Cisco. However, we did not hesitate to reorganize them where needed to make the material as easy as possible for you to learn. We also make the information accessible in the following ways:
 - ▶ The full list of exam units and objectives is included.
 - ▶ Each chapter begins with an outline that provides an overview of the material and the pages on which particular topics can be found.
 - ▶ The objectives are repeated where the material most directly relevant to them is covered.

- ▶ **Instructional features:** This book provides multiple ways to learn and reinforce the exam material. Following are some of the helpful methods:
 - ▶ **Exam Alerts:** These provide specific exam-related advice. Such tips might address what material is covered (or not covered) on the exam, how it is covered, mnemonic devices, or particular quirks of that exam.
 - ▶ **Review breaks and summaries:** Crucial information is summarized at various points in the book in lists or tables. Each chapter ends with a summary as well.
 - ▶ **Key terms:** A list of key terms appears at the end of each chapter.
 - ▶ **Notes:** Notes contain various kinds of useful or practical information, such as tips on technology or administrative practices, historical background on terms and technologies, or side commentary on industry issues.
 - ▶ **Warnings:** When using sophisticated information technology, there is always the potential for mistakes or even catastrophes because of improper application of the technology. Warnings alert you to such potential problems.
 - ▶ **In the Field sidebars:** These relatively extensive discussions cover material that might not be directly relevant to the exam but that is useful as reference material or in everyday practice. In the Field sidebars also provide useful background or contextual information necessary for understanding the larger topic under consideration.
 - ▶ **Exercises:** Found at the end of the chapters in the “Apply Your Knowledge” section and in the Challenges found throughout chapters, exercises are performance-based opportunities for you to learn and assess your knowledge.

- ▶ **Extensive practice test options:** This book provides numerous opportunities for you to assess your knowledge and practice for the exam. The practice options include the following:
 - ▶ **Exam questions:** These questions appear in the “Apply Your Knowledge” section. You can use them to help determine what you know and what you need to review or study further. Answers and explanations for these questions are provided in a separate section, titled “Answers to Exam Questions.”
 - ▶ **Practice Exam:** A practice exam is included in the “Final Review” section of the book.
- ▶ **Final Review:** This part of the book provides two valuable tools for preparing for the exam:
 - ▶ **Fast Facts:** This condensed version of the information contained in the book is useful for last-minute review.
 - ▶ **Practice Exam:** A practice test is included. Questions on this practice exam are written in styles similar to those used on the actual exam. Use the practice exam to assess your readiness for the real thing. Use the extensive answer explanations to improve your retention and understanding of the material.

This book includes several other features, such as a “Suggested Readings and Resources” section at the end of each chapter. It directs you to additional information that can aid you in your exam preparation and your real-life work. Also included are a glossary and an appendix describing what is on the CD-ROM.

For more information about the exam or the certification process, refer to the Cisco website at www.cisco.com/certification.

Network Hardware and Software Requirements

As a self-paced study guide, *CCNA Exam Prep* is meant to help you understand concepts that must be refined through hands-on experience. To make the most of your studying, you need to have as much background in and experience with both common operating systems and network environments as possible. The best way to do this is to combine studying with work on actual networks. These networks need not be complex. The concepts involved in configuring a network with only a couple of routers and a switch follow the same principles as those involved in configuring a network that has hundreds of connected systems. This section describes the recommended equipment for a solid practice environment.

To fully practice some of the exam objectives, you need to create a network with two (or more) routers networked together with one (or more) Cisco switches. We recognize that your finances may be limited, so we suggest purchasing routers from the Cisco 800 or 3600 series (primarily the 851W, 3620, and 3640 routers). These can commonly be found for between \$100 and \$500 through a used-equipment vendor or online auction. A Catalyst 1912 or 1924 switch can typically be found for less than \$50. Some of the syntax on the 1900 series switches may be slightly different from Cisco's mainline switches, but most of the commands are similar. Remember that Cisco has strict restrictions about using used or remanufactured equipment in production networks. Although Cisco hardware can be resold, the software that runs it (Cisco IOS software) cannot. Before used or remanufactured equipment can be used in a production environment, Cisco IOS software must be relicensed through Cisco or an authorized reseller. Be sure to verify these regulations before using your lab equipment in a production network.

If you are looking to build a lab environment, the following is a more detailed list of the minimum equipment you need. Keep in mind that this is the minimum equipment that we suggest for the CCNA. If you plan on moving into the CCNP, CCVP, or CCSP programs, you may want to look into the more advanced (and expensive) Cisco equipment such as the 2800 routers.

- ▶ At least one Cisco 851W router, which has four 10/100Mbps Ethernet ports to test configurations such as NAT, one fixed port to simulate WAN connectivity, wireless LAN with a detachable antenna, up to five VPN tunnels, and SDM capabilities.
- ▶ One additional Cisco router, such as the 2501, with one Ethernet port and two serial ports to create and test WAN connectivity.
- ▶ A DB-60 DTE to DB-60 DCE cross-over serial cable.
- ▶ At least one Cisco switch, ideally a 2900XL or 2950; however, a 1900 series switch will also suffice. If you decide to use a 1900 series switch, be sure it is equipped with the Enterprise IOS version, which includes the command-line interface. The Standard IOS for the 1900 allows only a menu-driven configuration.
- ▶ At least one rollover console cable.
- ▶ Multiple straight-through and cross-over network cables.
- ▶ Optionally, adding one or more PCs to the network can add realism and troubleshooting advantages. These PCs can be connected to the switch and act as network clients in your scenarios.

It's easy to get access to the necessary computer hardware and software in a corporate business environment. It can be difficult, however, to allocate enough time within the busy workday to complete a self-study program. Most of your study time will occur after normal working hours, away from the everyday interruptions and pressures of your regular job.

Advice on Taking the Exam

Keep this advice in mind as you study:

- ▶ **Read all the material:** Cisco has been known to include material that is not expressly specified in the objectives. This book includes additional information that is not reflected in the objectives in an effort to give you the best possible preparation for the examination—and for your real-world experiences to come.
- ▶ **Complete the exercises in each chapter:** They will help you gain experience in using the specified methodology or approach. Cisco exams require task- and experience-based knowledge and require you to understand how certain network procedures are accomplished.
- ▶ **Use the exam questions to assess your knowledge:** Don't just read the chapter content; use the exam questions to find out what you know and what you don't know. If you are struggling, study some more, review, and then reassess your knowledge.
- ▶ **Review the objectives:** Develop your own questions and examples for each objective listed. If you can develop and answer several questions for each objective, you should not find it difficult to pass the exam.

NOTE

Exam-Taking Advice Although this book is designed to prepare you to take and pass the Cisco certification exam, there are no guarantees. Read this book, work through the questions and exercises, and when you feel confident, take the practice exam. Your results should tell you whether you are ready for the real thing. Keep in mind that lots of capable, intelligent people fail these exams one or more times. Cisco exams are some of the most difficult in the industry; if you do fail the exam, use it as a tool to help you focus your studies in the areas where you felt weak. As overused as this guidance is, we still need to say it: Don't give up. Every author writing this book has hit his or her own low points in the certification journey. Trust us—after you pass the CCNA exam, the benefits far outweigh the cost.

When taking the actual certification exam, be sure that you answer all the questions before the time limit expires. Do not spend too much time on any one question. If you are unsure about a question, answer it as best you can and move on. This especially applies to simulation-based questions. Partial credit is given on these questions if you have completed the majority of the steps, so don't get hung up on any one simulation objective for an extended time.

Remember that the primary objective is not to pass the exam but to understand the material. When you understand the material, passing the exam should be simple. Knowledge is a pyramid; to build upward, you need a solid foundation. This book and the CCNA certification are designed to ensure that you have that solid foundation.

Good luck!