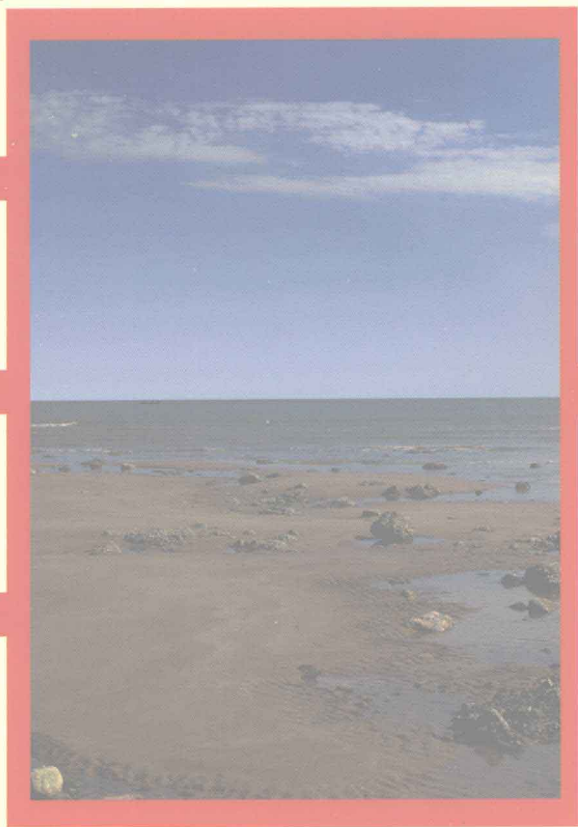


CCNA: Cisco Certified Network Associate Exam Notes

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复习重点及
模拟试题

(英文原版)

考试号 640-507

[美] Todd Lammle 著
Sean Odom



电子工业出版社

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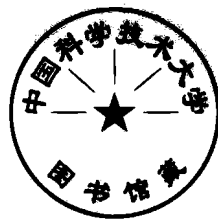
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北京 • BEIJING

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Cisco认证考试系列丛书说明

Cisco认证考试及其背景

当前，计算机系统及其网络系统的开发、管理、使用和维护需要大量不同层次的专业技术人员。真实地评价各种技术人员的技术水平是一件既复杂而又必不可少的工作。为此，许多世界著名的大公司和厂家纷纷推出了各自的认证考试方案。如Microsoft公司的MCSE、MCSD，Novell公司推出的CNE/CNA等。世界著名的网络系统公司——Cisco公司，则推出了其CCNA、CCDA、CCNP、CCDP、CCIE认证考试方案。那么，Cisco公司认证考试的意义、考试内容及其做法是怎样的呢？

Cisco公司建立于20世纪80年代初期，主要致力于开发、生产、销售高档网关、路由器和网络互联设备，其产品广泛应用于局域网、广域网和Internet等领域。基于Cisco产品领先的技术、优异的性能和良好的服务，Cisco公司的产品遍及世界各地，其业务量每年以非常高的速度递增，该公司的股票也以极高的速度逐年攀升。可以说，Cisco公司是计算机，特别是网络时代所创造的又一个奇迹。

Cisco公司的产品不同于普通的计算机软、硬件产品，它的技术含量高，原理复杂，因此学习和掌握其工作原理及使用方法需要许多相关知识和实践经验，需要高层次、高技术水准的技术人员。为保证使用、管理或提供Cisco产品服务的技术人员能够具备相应的技术水平，Cisco公司设立了一整套认证考试方案（见图0.1）。可以坦言，Cisco考试的难度高于其他公司，自然通过其考试后也更容易得到一些高薪的职位。也许是高难度的挑战所带来的诱惑，也许是高薪职位的吸引，目前参加或准备参加Cisco认证考试的人员正在逐年增加。

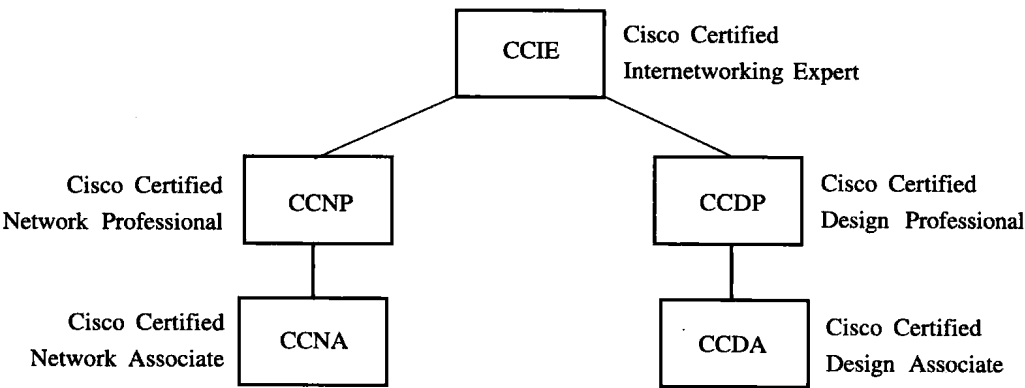


图0.1 Cisco认证考试由高及低的层次结构

通过各项认证考试的具体要求见表0.1中所示。

表0.1 CISCO认证证书及考试要求

证书名称	考试要求和考试科目	考试代码	注释
CCNA (Cisco Certified Network Associate)	Cisco Certified Network Associate	Exam 640-507	
CCNP (Cisco Certified Network Professional)	CCNA证书 Routing Switching Remote Access Support	Exam 640-503 Exam 640-504 Exam 640-505 Exam 640-506	①
	CCNA证书 Support	Exam 640-506 Exam 640-509	②
	F R/S (Foundation Routing and Switching)		
	DCN (Designing Cisco Networks)	Exam 640-441	
	CCDA证书 CCNP证书 CID (Cisco Internetwork Design)	Exam 640-025	③
CCDP (Cisco Certified Design Professional)	CCDA证书 CCNP的四门考试		④ 见CCNP
	CCNP证书 CID (Cisco Internetwork Design) IMCR (Installing and Maintaining Cisco Router)课程 Cisco实际上机考核	Exam 640-025	⑤
	CCIE-R/S (Exam Qualification)	Exam 350-001	
CCIE (Cisco Certified Internetworking Expert)			

注释: ① 要获取CCNP证书, 需先具有CCNA证书, 并通过四门考试。
② 获取CCNP证书, 也可采取第二种方法, 即先获取CCNA证书, 再通过Support考试和FR/S考试, 后者是一个相当长的测试过程, 内容涵盖了在前面①列出的几项考试内容, 选择此方式比前者节省约100美元。
③ 要获取CCDP证书, 需先具有CCDA和CCNP证书, 再经过CID考试。
④ 如果尚不具备CCNP证书, 可在具有CCDA证书的前提下, 分别通过CCNP的四门考试。
⑤ 获得CCIE证书是一项非常艰难的过程, 因此CCIE几乎成为了一种“出类拔萃”的标志。在进行严格的CISCO上机实验操作之前, CISCO推荐考生先完成CID并学习IMCR课程(本书写作时尚没有IMCR考试)。CISCO建议要有最少两年相关的工作经历, 并通过上述考试后进行CCIE-R/S资格考试, 再完成实际上机考核, 并获得CCIE证书。

关于Cisco认证考试系列丛书

计算机认证考试是计算机业界人士和高等院校学生的一个“热点”，同时也是出版界的一个“时髦话题”。从1998年开始，我们在国内领先推出了“微软MCSE系列丛书”，结果非常成功。利用与国外出版公司的密切合作关系，加之我们认真负责的翻译、编辑和出版印刷方面努力，MCSE系列丛书以其快速的出版速度、较高的质量和适中的价格得到了广大读者的欢迎，取得了很好的社会效益和经济效益。借助过去的成功经验，我们再次引进Sybex公司的版权，采用“原版引进，重新排版印刷”的方式，出版Cisco认证考试系列丛书（英文版），为配合Cisco认证考试的升级（2.0版），我们及时出版了相应科目的最新辅导书，现已出版了Cisco认证考试的学习指南系列（见表0.2），以及Cisco认证考试的复习重点及模拟试题系列（见表0.3）。

表0.2 Cisco认证考试系列

书	名	适用考试科目
CCNA: Cisco Certified Network Associate	学习指南（英文升级版）	CCNA Exam 640-507
CCNP: Switching	学习指南	CCNP Exam 640-504
CCNP: Remote Access	学习指南	CCNP Exam 640-505
CCNP: Support	学习指南	CCNP Exam 640-506
CCDA: Cisco Certified Design Associate (CCDA)	学习指南	CCDA Exam 640-441
CCDP: Cisco Internetwork Design (CID)	学习指南	CCDP Exam 640-025

表0.3 Cisco认证考试复习重点及模拟试题系列

书	名	适用 考试科目
CCDA: Cisco Certified Design Associate	复习重点及模拟试题	640-441
CCDP: Cisco Internetwork Design	复习重点及模拟试题	640-025
CCNA: Cisco Certified Network Associate	复习重点及模拟试题	640-507

以后，我们将推出其余认证考试科目的书籍。请读者留意书店内的销售广告或本系列书中的最新说明（恕不另行通知）。

最后，向支持和喜爱我们图书的广大读者表示感谢，并恳请读者对书中存在的问题提出批评和指正。

*This book is dedicated to Erin,
the most wonderful woman in the world.*
—Sean Odom

Acknowledgments

Would like to thank the wonderful staff at Sybex for all their support and help throughout this book process. I also want to personally thank Sean Odom for being so dependable.

—*Todd Lammle*

First, I want to thank my family for all the hours they lived without me during the writing process, especially Erin. I need to thank Todd Lammle for bringing me into this project and giving me the opportunity to get a CCNA book under my belt. I would also like to thank those behind the scenes at Sybex, including Elizabeth Campbell and Pete Gaughan, and Jeff Kellum for signing me not only for this book, but for my first as well! Jeff has no idea how he changes lives as an acquisitions editor, especially mine. I also thank the technical editor, Matthew Luallen, and Hanson Nottingham for his valuable input.

—*Sean Odom*

Sybex would like to thank electronic publishing specialist Judy Fung, proofreaders Laurie O'Connell and Nancy Riddiough, and indexer Lynnzee Elze for their valuable contributions to this book.

Introduction

This book is intended to start you out on an exciting new path toward obtaining your CCNA certification. It reaches beyond popular certifications like the MCSE and CNE to provide you with an indispensable factor in understanding today's network—insight into the Cisco world of internetworking and network design.

If you've purchased this book, you are probably chasing one of the Cisco professional certifications: CCNA/CCNP, CCDA/CCDP, or CCIE. All of these are great goals, and they are also great career builders. Glance through any newspaper and you'll find employment opportunities for people with these certifications—these ads are there because finding qualified network administrators is a challenge in today's market. The certification means you know something about the product, but more importantly, it means you have the ability, determination, and focus to learn—the greatest skills any employee can have!

You've probably also heard all the rumors about how hard the Cisco tests are—believe us, the rumors are true! Cisco has designed a series of exams that truly challenge your knowledge of their products. Each test not only covers the materials presented in a particular class, it also covers the prerequisite knowledge for that course.

Is This Book for You?

This book focuses on the exam objectives for the Cisco Certified Network Associate (CCNA). It will teach you how to install LAN, WAN, and dial-in networks using Cisco products. Each chapter begins with a list of the CCNA test objectives; be sure to read over them before working through the chapter.

The Sybex Exam Notes books were designed to be succinct, portable exam review guides. They can be used either in conjunction with a more complete study program—supplemented by books, CBT courseware, or practice in a classroom/lab environment—or as an exam review for those who don't feel the need for more extensive test preparation. It isn't our goal to "give the answers away," but rather to identify those topics on which you can expect to be tested and to pro-

vide sufficient coverage of these topics.

Perhaps you've been working with Cisco internetworking technologies for years now. The thought of paying lots of money for a specialized Cisco exam preparation course probably doesn't sound too appealing. What can they teach you that you don't already know, right? Be careful, though. Many experienced network administrators, even CCIEs, have walked confidently into test centers only to walk sheepishly out of them after failing a Cisco exam. As they discovered, there's the Cisco of the real world and the Cisco of the Cisco certification exams. It's our goal with the Exam Notes books to show you where the two converge and where they diverge. After you've finished reading through this book, you should have a clear idea of how your understanding of the technologies involved matches up with the expectations of the Cisco test makers.

Or perhaps you're relatively new to the world of Cisco internetworking, drawn to it by the promise of challenging work and higher salaries. You've just waded through an 1,800-page Cisco CCNA study guide or taken a class at a local training center. Lots of information to keep track of, isn't it? Well, by organizing the Exam Notes books according to the Cisco exam objectives and by breaking up the information into concise, manageable pieces, we've created what we think is the handiest exam review guide available. Throw it in your briefcase and carry it to work with you. As you read through the book, you'll be able to quickly identify those areas you know best and those that require more in-depth review.

NOTE The goal of the Exam Notes series is to help Cisco certification candidates familiarize themselves with the subjects on which they can expect to be tested in the certification exams. The CCNA exam objectives can be found at www.cisco.com/warp/public/10/wwtraining/certprog/testing/pdf/ccna_507.pdf. You'll notice that the objectives are vague. For complete, in-depth coverage of the technologies and topics involved in Cisco networking, we recommend the *CCNA: Cisco Certified Network Associate Study Guide*, from Sybex.

How Is This Book Organized?

As mentioned previously, this book is organized according to the official exam objectives list prepared by Cisco for the CCNA exam. Within each

chapter, the individual exam objectives are addressed in turn. Each objective section is further divided according to the type of information presented. Those sections are titled:

- Critical Information
- Necessary Procedures
- Exam Essentials
- Key Terms and Concepts
- Sample Questions

Critical Information

This section presents the greatest level of detail on information that is relevant to the objective. This is the place to start if you're unfamiliar with or uncertain about the technical issues related to the objective.

Necessary Procedures

Here you'll find instructions for procedures that require a lab computer to be completed. From configuring IP addressing to establishing serial point-to-point connections, the information in these sections addresses the hands-on requirements for the CCNA exam.

NOTE Not every objective has a hands-on procedure associated with it. For such objectives, the Necessary Procedures section has been left out.

Exam Essentials

In this section, we've put together a concise list of the most crucial topics of subject areas that you'll need to comprehend fully prior to taking the Cisco exam. This section can help you identify those topics that might require more study on your part.

Key Terms and Concepts

Here we've compiled a mini-glossary of the most important terms and concepts related to the specific objective. You'll understand what all those technical words mean within the context of the related subject matter.

Sample Questions

For each exam objective, we've included a selection of questions similar to those you'll encounter on the actual Cisco exam. Answers and explanations are provided so you can gain some insight into the test-taking process.

How Do You Become a CCNA?

With their certification program, Cisco has created a stepping-stone approach to CCIE (Cisco Certified Internetwork Expert) certification. You can become a CCNA by passing one written exam.

Why Become a CCNA?

Cisco has created a certification process, not unlike that of Microsoft or Novell, to give administrators a set of skills and prospective employers an authenticated way to measure those skills. Becoming a CCNA can be the initial step of a successful journey toward a new or refreshed, highly rewarding, and sustainable career.

As you study for the CCNA exam, we can't stress this enough: It's critical that you have some hands-on experience with Cisco routers. If you can get your hands on some 2500 series routers, you're set!

NOTE One way to get the hands-on router experience you'll need in the real world is to attend one of the seminars offered by Globalnet Training Solutions, Inc. (<http://www.lammle.com>), taught by this book's authors, Todd Lammle and Sean Odom. Each student has three routers and a switch to configure throughout the six-day seminar. Each seminar teaches the students what they need to know to pass his or her CCNA and CCDA exams!

NOTE You can also purchase the CCNA Virtual Lab e-Trainer, which is a simulated lab environment complete with three routers and one switch. (A more robust version can be downloaded from www.routersim.com.)

Where Do You Take the Exams?

You may take the exams at any one of the more than 800 Sylvan Prometric Authorized Testing Centers around the world. For the location of a testing center near you, call 800-204-3926. Outside the

United States and Canada, contact your local Sylvan Prometric Registration Center. To register for a Cisco exam:

1. Determine the number of the exam you want to take. (The CCNA exam number is 640-507.)
2. Register with the Sylvan Prometric Registration Center nearest you. You will need to pay in advance for the exam. At the time of this writing, registration costs \$100 per exam, and the test must be taken within one year of payment. You can sign up for an exam up to six weeks in advance or as late as the day you wish to take it. If something comes up and you need to cancel or reschedule your exam appointment, contact Sylvan Prometric at least 24 hours in advance.
3. When you schedule the exam, you'll be provided with instructions regarding all appointment and cancellation procedures, the ID requirements, and information about the testing center location.

NOTE Cisco recently announced that exams will also be administered at Virtual University Enterprises. Cisco expects the exams to be available December 2000. Visit www.vue.com or www.cisco.com/warp/public/10/wwtraining/certprog/testing/register.htm for more information.

What the Cisco CCNA Certification Exam Measures

The CCNA program was not only created to provide a solid introduction to the Cisco internetworking operating system (IOS) and to Cisco hardware, but also to internetworking in general, making it helpful to you in areas not exclusively Cisco's. It's hard to say at this point in the certification process, but it's not unrealistic to imagine that future network managers—even those without Cisco equipment—could easily require Cisco certifications of their job applicants.

To meet the CCNA certification skill level, you must be able to understand or perform the following:

- Install and support simple routed LAN, routed WAN, and switched LAN networks. The exam assumes basic networking understanding.
- Determine whether a hub, Ethernet switch, or router would be more appropriately used.

- Use Cisco software to identify addresses, protocols, and connectivity status in a network that contains multiple interconnected Cisco devices.
- Interconnect Cisco switches and routers using specified network design requirements.
- Configure Cisco switches and routers to support a specified list of protocols and technologies.
- Configure access lists to control access to network devices or segments and general network traffic.
- Verify that Cisco switches and routers, and their configured network services and protocols, operate correctly in a given network specification.

Tips for Taking Your Cisco CCNA Exam

The CCNA test contains around 65 questions, which are to be answered in 90 minutes. Now, Cisco allows you to schedule and take your exam on the same day. You are also now able to take more than one exam per day.

Many questions on the exam will have potential answers that at first glance look identical—especially the syntax questions! Remember to read through the choices carefully, because a “close” answer won’t cut it. If you choose an answer in which the commands are in the wrong order or there is even one measly character missing, you’ll get the question wrong. So to practice, take the sample quizzes at the end of each objective section in this book over and over, until they feel natural to you.

Also, never forget that the right answer is the Cisco answer. In many cases, more than one answer will appear to be the answer, but the *correct* answer is the one Cisco recommends.

Here are some general tips for exam success:

- Arrive early at the exam center so you can relax and review your study materials—particularly IP tables and lists of exam-related information.

-
- Read the questions *carefully*. Don't jump to conclusions. Make sure you're clear on *exactly* what the question is asking.
 - Don't leave any unanswered questions. These will be counted against you.
 - 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 this will greatly improve your odds should you need to make an "educated guess."

Once you have completed an exam, you'll be given immediate online notification of your pass or fail status, plus a printed Examination Score Report indicating whether you passed or failed, along with your exam results by section. (The test administrator will give you the printed score report.) Test scores are automatically forwarded to Cisco within five working days after you take the test, so you don't need to send your score to them. If you pass the exam, you'll receive confirmation from Cisco, typically within two to four weeks.

How to Contact the Authors

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How to Contact the Publisher

Sybex welcomes reader feedback on all of their titles. Visit the Sybex Web site at <http://www.sybex.com> for book updates and additional certification information. You'll also find online forms to submit comments or suggestions regarding this or any other Sybex book.

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