

CCNP: Cisco Certified Network Professional Exam Notes

# CCNP 四合一



## 考试指南

(英文原版)

[美] Todd Lammle 著

考试号 640-503 640-504  
640-505 640-506



电子工业出版社

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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、高技术水平的人员。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。

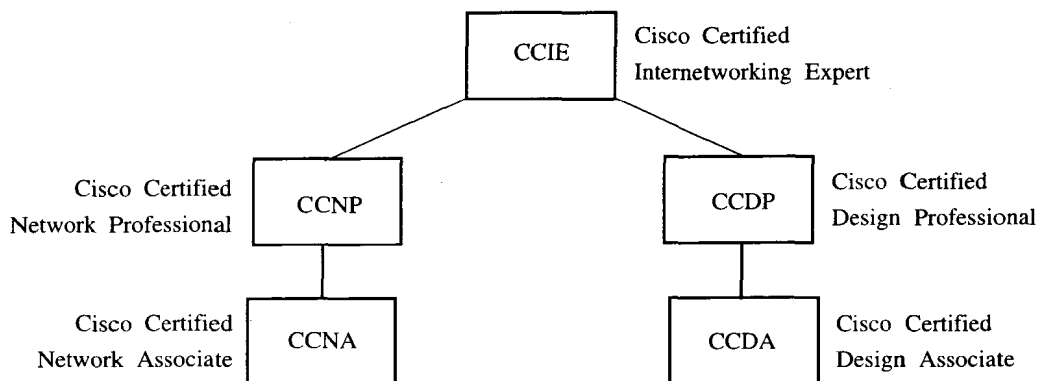


图0.1 Cisco认证考试由高及低的层次结构

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 F R/S (Foundation Routing and Switching)	Exam 640-506 Exam 640-509	②
CCDA (Cisco Certified Design Associate)	DCN (Designing Cisco Networks)	Exam 640-441	
CCDP (Cisco Certified Design Professional)	CCDA证书 CCNP证书 CID (Cisco Internetwork Design)	Exam 640-025	③
	CCDA证书 CCNP的四门考试		④
CCIE (Cisco Certified Internetworking Expert)	CCNP证书 CID (Cisco Internetwork Design) IMCR (Installing and Maintaining Cisco Router)课程 Cisco实际上机考核 CCIE-R/S (Exam Qualification)	Exam 640-025 Exam 350-001	⑤ 见CCNP

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: Routing学习指南	CCNP Exam 640-503
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
CCIE: Cisco Certified Internetwork Expert学习指南	CCIE Exam 350-001
CCNP四合一考试指南（英文原版）	CCNP Exam 640-503
	CCNP Exam 640-504
	CCNP Exam 640-505
	CCNP Exam 640-506

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。

## Acknowledgments

**T**hanks go to Marilyn Smith and Molly Glover for staying patient with me and adding all their great ideas. I hope to work on future projects with you. Thank you both!

I also would like to thank editor Ronn Jost and technical editor André Paree-Huff, as well as all the Sybex folks who helped produce the book: Judy Fung, Ted Laux, Emily Hsuan, Nelson Kim, Laurie O'Connell, Yariv Rabinovitch, Nancy Riddiough, and Laura A. Ryan.

## Introduction

If you are reading this book, you are probably chasing one of the Cisco professional certifications: CCNA/CCNP, CCDA/CCDP, or even CCIE. All of these are great goals, and they are also important career builders. Glance through any newspaper, and you will find employment opportunities for people with these Cisco certifications. Those 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 important, it means you have the ability, determination, and focus to learn—the greatest skills any employee can have!

You have probably heard rumors about how hard the Cisco tests are. The rumors are true! Cisco has designed a series of exams that truly challenge your knowledge of Cisco products. Each test not only covers the materials presented in a particular class, but also the prerequisite knowledge for that course.

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### Is This Book for You?

This book is intended to help you prepare for obtaining your Cisco Certified Network Professional (CCNP) certification and provides insight into the Cisco world of internetworking and network design. It will teach you how to install LAN, WAN, and dial-in networks using Cisco products.

The Sybex Exam Notes books are 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 do not feel the need for more extensive test preparation. It isn't our goal to "give the answers away," but rather to identify the topics on which you can expect to be tested and to provide sufficient coverage of those topics.

Perhaps you've been working with Cisco internetworking technologies for years now. The thought of paying a lot 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 is 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.

On the other hand, 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 800-page Cisco study guide or taken a class at a local training center. That's a lot of information to keep track of, isn't it? This book helps you remember what you need to know by providing a review of essential material, organized in an easy-to-peruse format.

Whether you are an experienced Cisco professional or just getting started, this book can help you prepare for the CCNP exams. 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.

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**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. For complete, in-depth coverage of the technologies and topics involved in Cisco networking, we recommend the *CCNP: Cisco Certification Network Professional Study Guides* (four total), published by Sybex.

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## How Is This Book Organized?

This book is organized according to the official exam objectives lists prepared by Cisco for the CCNP Routing, Switching, Remote Access, and Support exams. It is divided into four parts, each covering a specific exam. Each chapter begins with a list of the exam objectives covered in the chapter. Be sure to read over the objectives before working through the chapter.

Within each chapter, the individual exam objectives are addressed in turn. The most up-to-date CCNP exam objectives can be found at [www.cisco.com/warp/public/10/wwtraining/certprog/lan/programs/ccnp.html](http://www.cisco.com/warp/public/10/wwtraining/certprog/lan/programs/ccnp.html). You'll notice that the objectives are vague. In this book, the exam objectives are reworded to clarify their intent.

Each objective section is further divided according to the type of information presented. Those sections are titled as follows:

- Critical Information
- Necessary Procedures
- Exam Essentials

- Key Terms and Concepts

**Critical Information**

The Critical Information 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**

In the Necessary Procedures section, 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 CCNP exam.

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

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**Exam Essentials**

The Exam Essentials section contains a concise list of the most crucial topics that you'll need to comprehend fully prior to taking the Cisco exam. This section can help you identify those topics that might need to review.

**Key Terms and Concepts**

The Key Terms and Concepts section is a mini-glossary of the most important terms and concepts related to the specific objective. You need to understand what those technical words mean within the context of the related subject matter.

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**What's on the CD?**

On the enclosed CD, you will find additional review tools and materials. The CD includes four sample tests, one for each of the CCNP exams, and 200 flashcard questions, 50 for each exam, that can be viewed on your PC and Palm devices. The CD also includes the complete version of *CCNP: Cisco Certified Network Professional Exam Notes* in PDF, so you can access the entire book electronically and search for information on any topic in seconds.

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**How Do You Become a CCNP?**

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 CCNP can be the initial step of a successful journey toward a new or refreshed, highly rewarding, and sus-

tainable career.

With their certification program, Cisco has created a stepping-stone approach to CCIE (Cisco Certified Internetwork Expert) certification. You can become a CCNP by passing four written exams: Routing, Switching, Remote Access, and Support. Alternatively, you can take an exam called Foundation R/S, which encompasses the Routing, Switching, and Remote Access exams in one long exam. Then you just need to take the Support exam to become a CCNP. Remember that to complete your CCNP certification, you must also pass the CCNA exam.

As you study for the exams, it's critical that you have some hands-on experience with Cisco routers and switches. You'll need to work with at least four Cisco 2500 series routers, one Catalyst 5000 series switch, and one Catalyst 1900 series switch.

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**TIP** 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. ([www.globalnettraining.com](http://www.globalnettraining.com)), taught by this book's author, Todd Lammle. Each student has three routers and two switches to configure throughout the 11-day CCNP seminar. You can also purchase the CCNP Virtual Lab e-Trainer, which is a simulated Cisco switch and router lab environment. (A more robust version can be downloaded from [www.routersim.com](http://www.routersim.com).)

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### 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.

First, determine the number of the exam you want to take:

- Routing: 640-503
- Switching: 640-504
- Remote Access: 640-505
- Support: 640-506
- Foundation R/S: 640-509

Then 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 one working day prior to 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. Same-day registration is now available for the Cisco tests.

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.

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**NOTE** Cisco exams are also administered at Virtual University Enterprises (VUE). Visit [www.vue.com](http://www.vue.com) or [www.cisco.com/warp/public/10/wwtraining/certprog/testing/register.htm](http://www.cisco.com/warp/public/10/wwtraining/certprog/testing/register.htm) for more information.

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### **What the Cisco CCNP Certification Exams Measure**

The CCNP program was created not only to provide a solid introduction to the Cisco Internetworking Operating System (IOS) and Cisco hardware, but also to offer a foundation in internetworking in general, making it helpful to you in areas not exclusively Cisco's. It's possible that in the future, network managers—even those without Cisco equipment—will require job applicants to have Cisco certifications.

To meet the CCNP certification skill level, you must be able to understand or perform the exam objectives covered in this book.

### **Tips for Taking Your Cisco CCNP Exam**

The four CCNP exams contain around 65 questions, which are to be answered in about 90 minutes. Each exam varies.

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**NOTE** The Routing exam just changed to 60 minutes in length. The other three exams are still around 90 minutes at this time. Please always check the Cisco Web site for the latest information.

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Many questions on the exams 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 character missing, you'll get the question wrong.

Also, never forget that the right answer is the Cisco answer. In many cases, more than one answer will appear to be right, 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 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.
- 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 edu-

cated 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 four CCNP exams, you'll receive confirmation from Cisco, typically within two to four weeks (although it's possible that your certification card will arrive within a week).

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## **How to Contact the Author and Publisher**

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Sybex welcomes reader feedback on all of their titles. Visit the Sybex Web site at [www.sybex.com](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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