CCDA Cisco Certified Design Associate 学习指南

（英文原版）

Cisco认证考试
系列丛书之四

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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考试的难度高于其它公司，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。
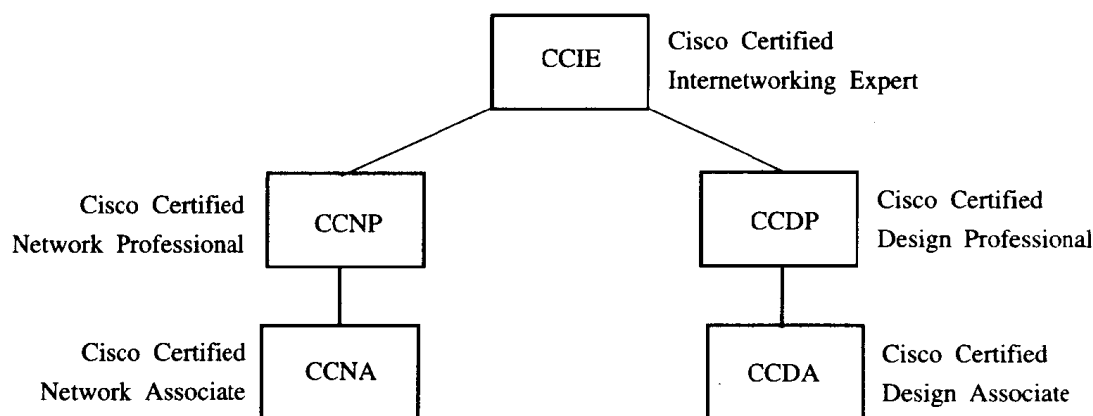

图0.1 Cisco认证考试由高及低的层次结构

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 640-407	
CCNP (Cisco Certified Network Professional)	CCNA证书 ACRC (Advanced Cisco Router Configuration) CLSC (Cisco Lan Switch Configuration) CIT (Cisco Internetwork Troubleshooting)	Exam 640-403 Exam 640-404 Exam 640-406	①
	CCNA证书 CIT (Cisco Internetwork Troubleshooting) F R/S (Foundation Routing and Switching)	Exam 640-406 Exam 640-409	②
CCDA (Cisco Certified Design Associate)	CDS (Cisco Design Specialist)	Exam 9E0-004	
CCDP (Cisco Certified Design Professional)	CCDA证书 CCNP证书 CID (Cisco Internetwork Design)	Exam 640-025	③
	CCDA证书 ACRC、CLSC、CIT、CMTD四门考试		④ 见CCNP
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

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CIT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 ACRC、CLSC、CMTD三项，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CCDP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的一个"热点"，同时也是出版界的一个"时髦话题"。1998年我们在国内领先推出了"微软MCSE系列丛书"，合计20余册（见本书封底的书目），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），在1999年将首先推出如下5本书籍（见表0.2）。

表0.2 Cisco认证考试系列丛书

中文书名	丛书编号	适用考试科目
CCNA: Cisco CCNA学习指南	Cisco认证考试系列丛书之一	CCNA Exam 640-407
CCNP: Cisco ACRC学习指南	Cisco认证考试系列丛书之二	CCNP Exam 640-403
CCNP: Cisco CLSC学习指南	Cisco认证考试系列丛书之三	CCNP Exam 640-404
CCNP: Cisco CIT学习指南	Cisco认证考试系列丛书之五	CCNP Exam 640-440
CCDA: Cisco CCDA学习指南	Cisco认证考试系列丛书之四	CCDA Exam 640-441

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。

1999年 春

For my family, and all their patience with me throughout this project

—Donald Porter

Acknowledgments

It takes a lot of people to produce a book like this, and I appreciate all of those who, as part of the editorial and production teams at SYBEX, helped me to make this book a reality. Among those team members, thanks to Neil Edde and Brenda Frink for their understanding and assistance. I appreciate Linda Stephenson and Jeff Gammon, who, respectively, edited and project edited this book, for their patience, thoughtful questions, and hard work. Thaddeus Mann and John Swartz reviewed manuscript and galleys for technical issues, and I thank them for their careful work. Shannon Murphy efficiently and happily coordinated the production side of things; Catherine Morris and Sandy Young carefully proofread each page; and Franz Baumhackl adeptly laid out these pages; I am grateful to each of them for their good work.

—Todd Lammle

I would like to thank all of my coworkers for answering my questions and keeping me headed in the right direction: Bill, Kevin, Ross, and Mike. I also would like to thank the staff at SYBEX for all of their work in keeping this project going. Finally, thanks to Todd Lammle for including me on this project.

—Donald Porter

Introduction

This book is an excellent step in your Cisco certification. If you are reading this, you are most likely a CCNA, and perhaps even a CCNP. This book is designed to introduce you to the world of network design, and prepare you to pass the DCN exam and achieve certification as a Cisco Certified Design Associate CCDA.

> **WARNING** If you have not yet achieved your CCNA certification, and do not have at least equivalent experience, you should start with the CCNA before going on to CCDA.

Cisco—A Brief History

A lot of readers may already be familiar with Cisco and what they do. But those of you new to the field, or maybe even those of you with 10 or more years in the field wishing to brush up on the new technology, may appreciate a little background on Cisco.

In the early 1980s, a married couple who worked in different computer departments at Stanford University started up cisco Systems (notice the small c). Their names are Len and Sandy Bosack. They were having trouble getting their individual systems to communicate (like many married people). so in their living room they created a gateway server to make it easier for their disparate computers in two different departments to communicate using the IP protocol.

In 1984, cisco Systems was founded with a small commercial gateway server product that changed networking forever. Some people think the name was intended to be San Francisco Systems, but the paper got ripped on the way to the incorporation lawyers—who knows—but in 1992, the company name was changed to Cisco Systems, Inc.

The first product they marketed was called the Advanced Gateway Server (AGS). Then came the Mid-Range Gateway Server (MGS), the Compact Gateway Server (CGS), the Integrated Gateway Server (IGS), and the AGS+. Cisco calls these "the old alphabet soup products."

Then, in 1993, Cisco came out with the amazing 4000 router. and then the even more amazing 7000, 2000, and 3000 series routers. These are still around and evolving (almost daily it seems!).

Cisco Systems has since become an unrivaled worldwide leader in networking for the Internet. Its networking solutions can easily connect users working

from diverse devices on disparate networks. Cisco products make it simple for people to access and transfer information without regard to differences in time, place, or platform.

The Cisco Systems big picture is that it provides end-to-end networking solutions that customers can use to build an efficient, unified information infrastructure of their own or to connect to someone else's—an important piece in the Internet/networking-industry puzzle, because a common architecture that delivers consistent network services to all users is now a functional imperative. And because Cisco Systems offers such a broad range of networking and Internet services and capabilities, users needing regular access to their local network or the Internet can do so unhindered, making Cisco's wares indispensable.

Cisco answers this need with a wide range of hardware products used to form information networks using the Cisco Internetworking Operating System software. This software provides network services, paving the way for networked technical support and professional services for maintaining and optimizing all network operations.

Along with the Cisco IOS, one of the services Cisco has created to help support the vast amount of hardware they have engineered is the Cisco Certified Internetworking Expert (CCIE) program, designed specifically to equip people to effectively manage the vast quantity of installed Cisco networks. Their business plan is simple: If you want sell more Cisco equipment and have more Cisco networks installed, ensure the networks you've installed run properly. But having a fabulous product line isn't all it takes to guarantee the huge success that Cisco enjoys—lots of companies with great products are now defunct. If you have complicated products designed to solve complicated problems, you need knowledgeable people who are fully capable of installing, managing, and troubleshooting them. That part isn't easy, so Cisco began the CCIE program to equip people in supporting these complicated networks. This program, known colloquially as the Doctorate of Networking, has also been very successful, primarily due to its extreme difficulty. And Cisco continuously monitors the program, changing it as they see fit to make sure it remains pertinent and accurately reflects the demands of today's internetworking business environments.

Building upon the highly successful CCIE program, Cisco Career Certifications permit you to become certified at various levels of technical proficiency, spanning the disciplines of network design and support. So whether you're beginning a career, changing careers, securing your present position, or seeking to refine and promote it, this is the book for you!

Cisco's Network Support Certifications

Cisco has created new certifications that will help you get the coveted CCIE as well as aid prospective employers in measuring skill levels. Before these new certifications, you took only one test and were then faced with the lab—making it difficult to succeed. With these new certifications adding a new and better approach to preparing for that almighty lab, Cisco has opened doors few were allowed through before. So what are these new certifications, and how do they help you get your CCIE?

Cisco Certified Network Associate (CCNA)

The CCNA certification is the first certification in the new line of Cisco certifications, and a precursor to all current Cisco certifications. With the new certification programs, Cisco has created a type of stepping-stone approach to CCIE certification. Now you can become a Cisco Certified Network Associate by paying only $100 for the test. And you don't have to stop there—you can choose to continue with your studies and achieve a higher certification called the Cisco Certified Network Professional (CCNP). Someone with a CCNP has all the skills and knowledge they need to attempt the CCIE lab. However, since no textbook can take the place of practical experience, we'll discuss what else you need to be ready for the CCIE lab shortly.

Why Become a CCNA? Cisco has created a certification process, not unlike Microsoft's and Novell's, that gives employers a way to measure the skills of prospective employees. Becoming a CCNA can be the initial step of a successful journey toward a new and highly rewarding and sustainable career.

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

If you make it through the CCNA still interested in Cisco and internetworking, you're headed down a certain path to success.

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

- Install, configure, and operate simple-routed LAN, routed WAN. and switched LAN and LANE networks
- Understand and be able to configure IP, IGRP, IPX, Serial, AppleTalk. Frame Relay, IP RIP, VLANs, IPX RIP, Ethernet, and access lists
- Install and/or configure a network

- Optimize WAN through Internet access solutions that reduce bandwidth and reduce WAN costs using features such as filtering with access lists, bandwidth on demand (BOD), and dial-on-demand routing (DDR)
- Provide remote access by integrating dial-up connectivity with traditional, remote LAN-to-LAN access as well as supporting the higher levels of performance required for new applications such as Internet commerce, multimedia, etc.

Cisco Certified Network Professional (CCNP)

These new Cisco certifications have opened up many opportunities for the individual wishing to become Cisco certified but lacking the training, expertise, or the bucks to pass the notorious and often failed two-day Cisco-torture lab. The new Cisco certifications will truly provide exciting new opportunities for the CNE and MCSE who just didn't know how to advance to a higher level.

So you're thinking, "Great, what do I do after I pass the CCNA exam?" Well, if you want to become a CCIE in Routing and Switching (the most popular certification), understand that there's more than one path to that much-coveted CCIE certification. The first way is to continue studying and become a Cisco Certified Network Professional (CCNP). That means four more tests after the CCNA certification.

The CCNP program will prepare you to understand and comprehensively tackle the internetworking issues of today and beyond—not limited to things Cisco. You will undergo an immense metamorphosis, vastly increasing your knowledge and skills through the process of obtaining these certifications!

Remember, you don't need to be a CCNP or even a CCNA to take the CCIE lab—but to accomplish that, it's extremely helpful if you already have these certifications.

What Are the CCNP Certification Skills? Cisco demands a certain level of proficiency for their CCNP certification. In addition to those required for the CCNA, these skills include:

- Installing, configuring, operating, and troubleshooting complex routed LAN, routed WAN, and switched LAN networks, and dial access services.
- You must also understand complex networks, such as IP, IGRP, IPX, Async Routing, AppleTalk, Extended access lists, IP RIP, Route Redistribution, IPX RIP, Route Summarization, OSPF, VLSM, BGP, Serial, IGRP, Frame Relay, ISDN, ISL, X.25, DDR, PSTN, PPP, VLANs, Ethernet, ATM LAN emulation, access lists, 802.10, FDDI, and Transparent and Translational Bridging.

To meet the Cisco Certified Network Professional requirements, you must be able to perform the following:

- Install and/or configure a network to increase bandwidth, quicken network response times, and improve reliability and quality of service
- Maximize performance through campus LANs, routed WANs, and remote access
- Improve network security
- Create a global intranet
- Provide access security to campus switches and routers
- Provide increased switching and routing bandwidth, end-to-end resiliency services
- Provide custom queuing and routed priority services

How Do You Become a CCNP? After becoming a CCNA, the four exams you must take to get your CCNP are as follows:

Exam 640-403: Advanced Cisco Router Configuration (ACRC) Continues to build on the fundamentals learned in the ICRC course. It focuses on large multiprotocol internetworks and how to manage them with access lists, queuing, tunneling, route distribution, route summarization, and dial-on-demand.

Exam 640-404: Cisco Lan Switch Configuration (CLSC) Tests your understanding of configuring, monitoring, and troubleshooting Cisco switching products.

Exam 640-406: Cisco Internetwork Troubleshooting (CIT) Tests you on the troubleshooting information you learned in the other Cisco courses.

Exam 640-405: Configuring, Monitoring, and Troubleshooting Dialup Services (CMTD) Tests your knowledge of installing, configuring, monitoring, and troubleshooting Cisco ISDN and dialup access products.

> **NOTE** If you hate tests, you can take less of them by signing up for the CCNA exam, the CIT exam, and then just one more long exam called the Foundation R/S exam 640-409. Doing this will also give you your CCNP—but beware, it's a really long test that fuses all the material listed above into one exam. Good luck! However, by taking this exam, you get three tests for the price of two, which saves you S100 (if you pass). Some people think it's easier to take the Foundation R/S exam because you can leverage the areas in which you would score higher against the areas in which you wouldn't.

Cisco Certified Internetworking Expert (CCIE)

Okay. You've become a CCNP, and now you've fixed your sights on getting your CCIE in Routing and Switching—what do you do next? For that, Cisco recommends that before you take the lab, you take test 640-025 (Cisco Internetwork Design, or CID), and the Cisco authorized course, "Installing and Maintaining Cisco Routers (IMCR)." By the way, no Prometric test for IMCR exists at this

writing, and Cisco recommends *a minimum* of two years' on-the-job experience before taking the CCIE lab. After jumping those hurdles, you then have to pass the CCIE-R/S Exam Qualification (exam 350-001) before taking on the actual lab.

To become a CCIE, Cisco recommends the following:

1. Attend all the recommended courses at an authorized Cisco training center and pony up around $15,000–$20,000, depending on your corporate discount.

2. Pass the Drake/Prometric exam ($200 per exam—so hopefully, you'll pass it the first time).

3. Pass the two-day hands-on lab at Cisco. This costs $1,000 per lab, which many people fail two or more times (some never make it through!). Also, you can only take the exam in San Jose, California; Research Triangle Park, North Carolina; Sydney, Australia; Halifax, Nova Scotia; Tokyo, Japan; or Brussels, Belgium. This means you might just need to add travel costs to those $1,000 big dogs.

The CCIE Skills   The CCIE-Router and Switching will include advanced technical skills required to maintain optimum network performance and reliability as well as advanced skills in supporting diverse networks that use disparate technologies. CCIEs just don't have problems getting a job. These experts are basically inundated with offers to work for six figure salaries! But that's because it isn't easy to attain the level of capability mandatory for Cisco's CCIE level. For example, a CCIE will have the following skills down pat:

- Install, configure, operate, and troubleshoot complex routed LAN, routed WAN, switched LAN and ATM LANE networks, and dial access services.
- Diagnose and resolve network faults.
- Use packet/frame analysis and Cisco debugging tools.
- Document and report the problem-solving processes used.
- Possess general LAN/WAN knowledge, including data encapsulation and layering; windowing, flow control, and relation to delay; error detection and recovery; link-state, distance-vector, and switching algorithms; management; monitoring; and fault isolation.
- Have knowledge of a variety of corporate technologies—including major services provided by desktop, WAN, and Internet groups—as well as the functions, addressing structures, and routing, switching, and bridging implications of each of their protocols. A CCIE will also have knowledge of Cisco-specific technologies, including router/switch platforms, architectures, and applications; communication servers; protocol translation and applications; configuration commands and system/network impact; and LAN/WAN interfaces, capabilities, and applications.

Cisco's Network Design Certifications

In addition to the Network Support certifications, Cisco has created another certification track for network designers. The two certifications within this track are the Cisco Certified Design Associate and Cisco Certified Design Professional certifications. If you're reaching for the CCIE stars, we'd highly recommend the CCDA and CCDP certifications before attempting the lab (or attempting to advance your career).

This certification will give you the knowledge to design routed LAN, routed WAN, and switched LAN and ATM LANE networks.

Cisco Certified Design Associate (CCDA)

To become a CCDA, you must pass the DCN exam 640-441. Cisco used to require candidates for CCDA certification to complete CCNA certification first. They have dropped this requirement, and you can now take the DCN exam and achieve CCDA certification without first completing CCNA status. However, just because you no longer are required to complete the CCNA before attempting the CCDA does not mean that it would not be a great idea to do so. If you do not have technical knowledge at the level of at least a CCNA, you will have a difficult time with the CCDA. Remember the CCIE? Cisco does not require the CCNP to gain CCIE status, but you had better know the material before the exam! The same concept applies here—you will want to have the technical skills of the CCNA (whether you have the certification or not) before attempting the CCDA.

For a comprehensive list of the skills required to achieve CCDA status, look at the Table of Contents of this book! Topics include the following:

- Designing simple routed LAN, routed WAN, and switched LAN and ATM LANE networks
- Network-layer addressing
- Specifying routing protocols
- Filtering with access lists, and other IOS features
- Topology design issues such as security and hierarchical design
- Network management strategies
- Non-technical steps, such as analysis of the customer's existing network and responding to an RFP

Cisco Certified Design Professional (CCDP)

If you're already a CCNP and want to get your CCDP, you can simply take the CID 640-025 test. But if you're not yet a CCNP, you must take the ACRC, CLSC, CIT, and CMTD exams. You will also need to complete your CCNA before you can become a CCDP.

CCDP certification skills include:

- Designing complex routed LAN, routed WAN, and switched LAN and ATM LANE networks, building upon the base level of the CCDA technical knowledge

CCDPs must also demonstrate proficiency in:

- Network-layer addressing in a hierarchical environment
- Traffic management with access lists
- Hierarchical network design
- VLAN use and propagation
- Performance considerations: required hardware and software: switching engine; and memory, cost, and minimization

What Does This Book Cover?

This book covers everything you need to become a Cisco Certified Design Associate CCDA. You will review the basics of internetworking, then go on to discover all of the steps of network design. You will begin by taking a thorough inventory of your customer's current network and expectations. From this, you will design topology changes and specify hardware for LAN and WAN connectivity, addressing schemes, routing protocols, security features, IOS features, network management issues, and other technical details. Finally, you will learn how to present this information to your customer, both in written format as well as with actual demonstrations.

> **WARNING** This book assumes that you are already CCNA certified, or have equivalent knowledge.

Where to 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) 755- 3926. Outside the United States and Canada, contact your local Sylvan Prometric Registration Center.

To register for the Designing Cisco Networks (DCN) exam:

1. Determine the number of the exam you want to take. (The DCN exam number is 640-441.)
2. Register with the Sylvan Prometric Registration Center nearest to you. At this point, you will be asked to pay in advance for the exam. At this writing, the exams are $100 each and must be taken within one year of payment. You can schedule exams up to six weeks in advance or as soon 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 isn't available for the Cisco tests.

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.

Tips for Taking Your CCDA Exam

The DCN test contains 88 questions to be completed in 90 minutes. You must schedule for a test at least 24 hours in advance (unlike the Novell or Microsoft exams), and you aren't allowed to take more than one Cisco exam per day.

Many questions on the exam will have answer choices that at first glance look identical. Remember, read through the choices carefully because close won't cut it. If you get commands in the wrong order or forget one measly character, you'll get the question wrong. So to practice, do the hands-on exercises at the end of the chapters over and over again until they feel natural to you. Unlike Microsoft or Novell tests, the exam has answer choices that are really similar—some will be dead wrong, but more than likely, it will just be very *subtly* wrong. Some other choices may be right, but they're shown in the wrong order. Cisco does split hairs, and they're not at all above giving you classic trick questions.

Also, never forget that the right answer is the Cisco answer. In many cases, they'll present more than one correct answer, but the *correct* answer is the one Cisco recommends. A good example of this would be a question about which routing protocol is correct for a "small business"? The correct answer according to Cisco is RIP, even though we would personally be the last people to implement RIP in any business!

Here are some general tips for exam success:

- Arrive early at the exam center so you can relax and review your study materials.
- Read the questions *carefully*. Just don't jump to conclusions. Make sure you're clear on *exactly* what the question is asking.
- Don't leave any unanswered questions. They count these against you.
- When answering multiple-choice questions you're not sure about, use a process of elimination to get rid of the obviously incorrect questions first. Doing this will greatly improve your odds should you need to make an "educated guess."
- Because the hard questions will eat up the most time, save them for last. You can move forward and backward through the exam.
- If you are unsure of the answer to a question, choose one of the answers and mark the question so that if you have time, you can go back to it, and

then go on. Remember an unanswered question is as bad as a wrong one, so answer it because you may run out of time or forget to go back to it.

Once you have completed an exam, you'll be given immediate, online notification of your pass or fail status, a printed Examination Score Report indicating your pass or fail status, and 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 Use This Book

This book can provide a solid foundation for the serious effort of preparing for the Cisco Certified Network Associate exam. To best benefit from this book, you might want to use the following study method:

1. Study each chapter carefully, making sure you fully understand the information.
2. Complete all of the Case Studies, listed at the end of most chapters.
3. Answer the exercise questions related to that chapter. (The answers are in Appendix A.)
4. Note which questions confuse you, and study those sections of the book again.
5. Before taking the exam, try your hand on the practice exams included on the CD that comes with this book. They'll give you a complete overview of what you can expect to see on the real thing.

To learn all the material covered in this book, you're going to have to apply yourself regularly and with discipline. Try to set aside the same time every day to study, and select a comfortable and quiet place to do so. If you work hard, you will be surprised at how quickly you learn this material. All the best!

What's on the CD?

We've worked hard to provide some really great tools to help you with your certification process. All of these should be loaded on your workstation when studying for the test.

The Edge Test for Cisco CCDA Test Preparation Software

Provided by EdgeTek Learning Systems, this test preparation software prepares you for successfully passing the CCDA exam. To find more test simulation software for all Cisco and NT exams, look for the exam link on www.lammle.com. You can also call 1-800-800-1NET (1638) for more information.