



CompTIA Network+ in a Nutshell

*"Networking is an essential part
of building wealth."*

—ARMSTRONG WILLIAMS



In this chapter, you will learn how to

- Describe the importance of CompTIA Network+ certification
- Illustrate the structure and contents of the CompTIA Network+ certification exam
- Plan a strategy to prepare for the exam

By picking up this book, you've shown an interest in learning about networking. But be forewarned. The term *networking* describes a vast field of study, far too large for any single certification, book, or training course to cover. Do you want to configure routers for a living? Do you want to administer a large Windows network at a company? Do you want to install wide area network connections? Do you want to set up Web servers? Do you want to secure networks against attacks?

If you're considering a CompTIA Network+ certification, you probably don't yet know exactly what aspect of networking you want to pursue, and that's okay! You're going to *love* preparing for the CompTIA Network+ certification.

Attaining CompTIA Network+ certification provides you three fantastic benefits. First, you get a superb overview of networking that helps you decide what part of the industry you'd like to pursue. Second, it acts as a prerequisite toward other, more advanced certifications. Third, the amount of eye-opening information you'll gain just makes getting CompTIA Network+ certified plain old *fun*.

Nothing comes close to providing a better overview of networking than CompTIA Network+. The certification covers local area networks (LANs), wide area networks (WANs), the Internet, security, cabling, and applications in a wide-but-not-too-deep fashion that showcases the many different parts of a

network and hopefully tempts you to investigate the aspects that intrigue you by looking into follow-up certifications.

Both Cisco and Microsoft—the two main choices for follow-up training—treat CompTIA Network+ as a prerequisite toward at least some of their own certifications, and in some cases provide certification credit for attaining CompTIA Network+ certification. These benefits sometimes change, so check out the Cisco (www.cisco.com) and Microsoft (www.microsoft.com) Web sites for details. Just do a search for **training**.

The process of attaining CompTIA Network+ certification will give you a solid foundation in the whole field of networking. Mastering the competencies will help fill in gaps in your knowledge and provide an ongoing series of “ah ha!” moments of grasping the big picture that make being a tech so much fun.

Ready to learn a lot, grab a great certification, and have fun doing it? Then welcome to CompTIA Network+ certification!

■ Who Needs CompTIA Network+? I Just Want to Learn about Networks!

Whoa up there, amigo! Are you one of those folks who either has never heard of the CompTIA Network+ exam or just doesn't have any real interest in certification? Is your goal only to get a solid handle on the idea of networking and get a jump start on the basics? Are you looking for that “magic bullet” book that you can read from beginning to end and then start installing and troubleshooting a network? Do you want to know what's involved with running network cabling in your walls or getting your new wireless network working? Are you tired of not knowing enough about what TCP/IP is and how it works? If these types of questions are running through your mind, then rest easy—you have the right book. Like every book with the Mike Meyers name, you'll get solid concepts without pedantic details or broad, meaningless overviews. You'll look at real-world networking as performed by real techs. This is a book that understands your needs, well beyond the scope of a single certification.

If the CompTIA Network+ exam isn't for you, you can skip the rest of this chapter, shift your brain into learn mode, and dive into Chapter 2. But then, if you're going to have the knowledge, why *not* get the certification?

■ What Is CompTIA Network+ Certification?

CompTIA Network+ certification is an industry-wide, vendor-neutral certification program developed and sponsored by the Computing Technology Industry Association (CompTIA). The CompTIA Network+ certification shows that you have a basic competency in the physical support of networking systems and knowledge of the conceptual aspects of networking. The test covers the knowledge that a network technician with at least nine

months of networking experience should have. CompTIA recommends CompTIA A+ knowledge or background but does not require a CompTIA A+ certification to take the CompTIA Network+ exam. You achieve a CompTIA Network+ certification by taking one computer-based, multiple-choice examination. To date, many hundreds of thousands of technicians have become CompTIA Network+ certified.

CompTIA Network+ certification enjoys wide recognition throughout the IT industry. At first, it rode in on the coattails of the successful CompTIA A+ certification program, but it now stands on its own in the networking industry and is considered the obvious next step after CompTIA A+ certification.

What Is CompTIA?

CompTIA is a nonprofit, industry trade association based in Oakbrook Terrace, Illinois, on the outskirts of Chicago. Tens of thousands of computer resellers, value-added resellers, distributors, manufacturers, and training companies from all over the world are members of CompTIA.

CompTIA was founded in 1982. The following year, CompTIA began offering the CompTIA A+ certification exam. CompTIA A+ certification is now widely recognized as a *de facto* requirement for entrance into the PC industry. Because the A+ exam covers networking only lightly, CompTIA decided to establish a vendor-neutral test covering basic networking skills. So, in April 1999, CompTIA unveiled the CompTIA Network+ certification exam.

CompTIA provides certifications for a variety of areas in the computer industry, offers opportunities for its members to interact, and represents its members' interests to government bodies. CompTIA certifications include A+, Network+, Security+, and RFID+, to name a few. Check out the CompTIA Web site at www.comptia.org for details on other certifications.

CompTIA is *huge*. Virtually every company of consequence in the IT industry is a member of CompTIA: Microsoft, Dell, Cisco...name an IT company and it's probably a member of CompTIA.

The Current CompTIA Network+ Certification Exam Release

CompTIA constantly works to provide tests that cover the latest technologies and, as part of that effort, periodically updates its test objectives, domains, and test questions. This book covers all you need to know to pass the 2009 revision of the CompTIA Network+ exam.

How Do I Become CompTIA Network+ Certified?

To become CompTIA Network+ certified, you simply pass one computer-based, multiple-choice exam. There are no prerequisites for taking the CompTIA Network+ exam, and no networking experience is needed. You're not required to take a training course or buy any training materials. The only requirements are that you pay a testing fee to an authorized testing facility and then sit for the exam. Upon completion of the exam, you will immediately know whether you passed or failed. Once you've passed, you

become CompTIA Network+ certified for life, just like with CompTIA A+ certification. That's it—there are no annual dues and no continuing education requirements.

Now for the details: CompTIA recommends that you have at least nine months of networking experience and CompTIA A+ knowledge, but this is not a requirement. Note the word “recommend.” You may not need experience or CompTIA A+ knowledge but they help! The CompTIA A+ certification competencies have a small degree of overlap with the CompTIA Network+ competencies, such as types of connectors. As for experience, keep in mind that CompTIA Network+ is mostly a practical exam. Those who have been out there supporting real networks will find many of the questions reminiscent of the types of problems they have seen on LANs. The bottom line is that you'll probably have a much easier time on the CompTIA Network+ exam if you have some CompTIA A+ experience under your belt.

■ What Is the Test Like?

The CompTIA Network+ test contains 100 questions, which you have 90 minutes to complete. To pass, you must score at least 720 on a scale of 100–900. The exam questions are divided into six areas that CompTIA calls domains. This table lists the CompTIA Network+ domains and the percentage of the test that each represents.

CompTIA Network+ Domain	Percentage
1.0 Network Technologies	20%
2.0 Network Media and Topologies	20%
3.0 Network Devices	17%
4.0 Network Management	20%
5.0 Network Tools	12%
6.0 Network Security	11%

The CompTIA Network+ exam is extremely practical. Questions often present real-life scenarios and ask you to determine the best solution. CompTIA Network+ loves troubleshooting. Let me repeat: many of the test objectives deal with direct, *real-world troubleshooting*. Be prepared to troubleshoot both hardware and software failures, and to answer both “What do you do next?” and “What is most likely the problem?” types of questions.

A qualified CompTIA Network+ test candidate can install and configure a PC to connect to a network. This includes installing and testing a network card, configuring drivers, and loading all network software. The exam will test you on the different topologies, standards, and cabling.

Expect conceptual questions about the Open Systems Interconnection (OSI) seven-layer model. If you've never heard of the OSI seven-layer model, don't worry! This book will teach you all you need to know. While this model rarely comes into play during the daily grind of supporting a network, you need to know the functions and protocols for each layer to pass the CompTIA Network+ exam. You can also expect questions on most of the protocol suites, with heavy emphasis on the TCP/IP suite.



CompTIA occasionally makes changes to the content of the exam, as well as the score necessary to pass it. Always check the Web site of my company, Total Seminars (www.totalsem.com), before scheduling your exam.

How Do I Take the Test?

To take the test, you must go to an authorized testing center. You cannot take the test over the Internet. Prometric and Pearson VUE administer the actual CompTIA Network+ tests. You'll find thousands of Prometric and Pearson VUE testing centers scattered across the United States and Canada, as well as in over 75 other countries around the world. You may take the exam at any testing center. In the United States and Canada, call Prometric at 888-895-6116 or Pearson VUE at 877-551-7587 to locate the nearest testing center and schedule the exam. International customers should go to CompTIA's Web site at www.comptia.org, navigate to the CompTIA Network+ area of the site, and look under the **Ready to take the Exam** area for a link called **Find your test center**.



While you can't take the exam over the Internet, both Prometric and Pearson VUE provide easy online registration. Go to www.prometric.com or www.vue.com to register online.

How Much Does the Test Cost?

CompTIA fixes the price, no matter what testing center you use. The cost of the exam depends on whether you work for a CompTIA member. At press time, the cost for non-CompTIA members is \$239 (U.S.).

If your employer has a CompTIA membership, you can save money by obtaining an exam voucher. In fact, even if you don't work for a CompTIA member, you can purchase a voucher from member companies and take advantage of significant member savings. You simply buy the voucher and then use the voucher to pay for the exam. Most vouchers are delivered to you on paper, but the most important element is the unique voucher number that you'll generally receive via e-mail from the company that sells the voucher to you. That number is your exam payment, so protect it from prying eyes until you're ready to schedule your exam.

CompTIA requires any company that resells vouchers to bundle them with some other product or service. Because this requirement is somewhat vague, voucher resellers have been known to throw in some pretty lame stuff, just to meet the requirement and keep their overhead low. My company, Total Seminars, is an authorized CompTIA member and voucher reseller, and we bundle our CompTIA Network+ vouchers with something you can actually use: our excellent test simulation software. It's just like the CD-ROM in the back of this book, but with hundreds more questions to help you prepare for the CompTIA Network+ exam.

If you're in the United States or Canada, you can visit www.totalsem.com or call 800-446-6004 to purchase vouchers. As I always say, "You don't have to buy your voucher from us, but for goodness' sake, get one from somebody!" Why pay full price when you have a discount alternative?

You must pay for the exam when you schedule, either online or by phone. If you're scheduling by phone, be prepared to hold for a while. Have ready your Social Security number (or the international equivalent) and either a credit card or a voucher number when you call or begin the online scheduling process. If you require any special accommodations, both Prometric and Pearson VUE will be able to assist you, although your selection of testing locations may be a bit more limited.

International prices vary; see the CompTIA Web site for international pricing. Of course, prices are subject to change without notice, so always check the CompTIA Web site for current pricing!

■ How to Pass the CompTIA Network+ Exam

The single most important thing to remember about the CompTIA Network+ certification is that CompTIA designed it to test the knowledge of a technician with as little as nine months of experience—so keep it simple! Think in terms of practical knowledge. Read the book, practice the questions at the end of each chapter, take the practice tests on the CD-ROM in the back of the book, review any topics you missed, and you'll pass with flying colors.

Is it safe to assume that it's probably been a while since you've taken an exam? Consequently, has it been a while since you've had to study for an exam? If you're nodding your head yes, you'll probably want to read the next sections. They lay out a proven strategy to help you study for the CompTIA Network+ exam and pass it. Try it. It works.

Obligate Yourself

The first step you should take is to schedule the exam. Ever heard the old adage that heat and pressure make diamonds? Well, if you don't give yourself a little "heat," you might procrastinate and unnecessarily delay taking the exam. Even worse, you may end up not taking the exam at all. Do yourself a favor. Determine how much time you need to study (see the next section), then call Prometric or Pearson VUE and schedule the exam, giving yourself the time you need to study, adding a few extra days for safety. Afterward, sit back and let your anxieties wash over you. Suddenly, it will become a lot easier to turn off the television and crack open the book! Keep in mind that Prometric and Pearson VUE let you schedule an exam only a few weeks in advance, at most. If you schedule an exam and can't make it, you must reschedule at least a day in advance or lose your money.

Set Aside the Right Amount of Study Time

After helping thousands of techs get their CompTIA Network+ certification, we at Total Seminars have developed a pretty good feel for the amount of study time needed to pass the CompTIA Network+ exam. Table 1.1 will help you plan how much study time you must devote to the CompTIA Network+ exam. Keep in mind that these are averages. If you're not a great student or if you're a little on the nervous side, add another 10 percent. Equally, if you're the type who can learn an entire semester of geometry in one night, reduce the numbers by 10 percent. To use this table, just circle the values that are most accurate for you and add them up to get the number of study hours.

A complete neophyte will need at least 120 hours of study time. An experienced network technician already CompTIA A+ certified should only need about 24 hours.

Keep in mind that these are estimates. Study habits also come into play here. A person with solid study habits (you know who you are) can reduce the number by 15 percent. People with poor study habits should increase that number by 20 percent.

The total hours of study you need is _____.

Table 1.1 **Determining How Much Study Time You Need**

Type of Experience	Amount of Experience			
	None	Once or Twice	On Occasion	Quite a Bit
Installing a SOHO wireless network	4	2	1	1
Installing an advanced wireless network (802.1X, RADIUS, etc.)	2	2	1	1
Installing structured cabling	3	2	1	1
Configuring a home router	5	3	2	1
Configuring a Cisco router	4	2	1	1
Configuring a software firewall	3	2	1	1
Configuring a hardware firewall	2	2	1	1
Configuring an IPv4 client	8	4	2	1
Configuring an IPv6 client	3	3	2	1
Working with SOHO WAN connection (DSL, cable)	2	2	1	0
Working with advanced WAN connection (Tx, OCx, ATM)	3	3	2	2
Configuring a DNS server	2	2	2	1
Configuring a DHCP server	2	1	1	0
Configuring a Web application server (HTTP, FTP, SSH, etc.)	4	4	2	1
Configuring a VLAN	3	3	2	1
Configuring a VPN	3	3	2	1
Configuring a dynamic routing protocol	2	2	1	1

Study for the Test

Now that you have a feel for how long it's going to take, you need a strategy for studying. The following has proven to be an excellent game plan for cramming the knowledge from the study materials into your head.

This strategy has two alternate paths. The first path is designed for highly experienced technicians who have a strong knowledge of PCs and networking and want to concentrate on just what's on the exam. Let's call this group the Fast Track group. The second path, and the one I'd strongly recommend, is geared toward people like me: the ones who want to know why things work, those who want to wrap their arms completely around a concept, as opposed to regurgitating answers just to pass the CompTIA Network+ exam. Let's call this group the Brainiacs.

To provide for both types of learners, I have broken down most of the chapters into two parts:

- **Historical/Conceptual** It's not on the CompTIA Network+ exam, but it's knowledge that will help you understand more clearly what is on the CompTIA Network+ exam.
- **Test Specific** Topics that clearly fit under the CompTIA Network+ certification domains.

The beginning of each of these areas is clearly marked with a large banner that looks like the following.

Historical/Conceptual

If you consider yourself a Fast Tracker, skip everything but the Test Specific section in each chapter. After reading the Test Specific sections, jump immediately to the End of Chapter questions, which concentrate on information in the Test Specific sections. If you run into problems, review the Historical/Conceptual sections in that chapter. After going through every chapter as described, do the free practice exams on the CD-ROM that accompanies the book. First, do them in practice mode, and then switch to final mode. Once you start hitting in the 80–85 percent range, go take the test!

Brainiacs should first read the book—the whole book. Read it as though you're reading a novel, starting on Page 1 and going all the way through. Don't skip around on the first read-through, even if you are a highly experienced tech. Because there are terms and concepts that build on each other, skipping around will make you confused, and you'll just end up closing the book and firing up your favorite PC game. Your goal on this first read is to understand concepts—to understand the whys, not just the hows.

It's helpful to have a network available while you're doing each read-through. This gives you a chance to see various concepts, hardware, and configuration screens in action when you read about them in the book. Nothing beats doing it yourself to reinforce a concept or piece of knowledge!

You will notice a lot of historical information—the Historical/Conceptual sections—that you may be tempted to skip. Don't! Understanding how some of the older stuff worked or how something works conceptually will help you appreciate the reason behind networking features and equipment, as well as how they function.

After you have completed the first read-through, cozy up for a second. This time, try to knock out one chapter at a sitting. Concentrate on the Test Specific sections. Get a highlighter and mark the phrases and sentences that bring out major points. Take a hard look at the pictures and tables, noting how they illustrate the concepts. Then, do the end of chapter questions. Repeat this process until you not only get all the questions right, but also understand *why* they are correct!

Once you have read and studied the material in the book, check your knowledge by taking the practice exams included on the CD-ROM at the back of the book. The exams can be taken in practice mode or final mode. In practice mode, you are allowed to check references in the book (if you want) before you answer each question, and each question is graded immediately. In final mode, you must answer all the questions before you are given a test score. In each case, you can review a results summary that tells you which questions you missed, what the right answer is, and where to study further.

Use the results of the exams to see where you need to bone up, and then study some more and try them again. Continue retaking the exams and reviewing the topics you missed until you are consistently scoring in the 80–85 percent range. When you've reached that point, you are ready to pass the CompTIA Network+ exam!

If you have any problems or questions, or if you just want to argue about something, feel free to send an e-mail to me at michaelm@totalsem.com.

For additional information about the CompTIA Network+ exam, contact CompTIA directly at its Web site: www.comptia.org.

Good luck!

—Mike Meyers



Be aware that you may need to skip back to previous chapters to get the Historical/Conceptual information you need for a later chapter.



We have active and helpful discussion groups at www.totalsem.com/forums. You need to register to participate (though not to read posts), but that's only to keep the spammers at bay. The forums provide an excellent resource for answers, suggestions, and just socializing with other folks studying for the exam.