

MCSE 考试指南系列

MCSE:

Networking Essentials

考试指南 (英文原版)



*MCSE Test Success:
Networking Essentials*

微软认证的系
统工程师系列
丛书之十

[美] Todd Lammle 著



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著 者: [美] Todd Lammle

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MCSE系列丛书说明

MCSE考试

MCSE是Microsoft Certified Systems Engineer（微软认证的系统工程师）的缩写形式。MCSE证书意味着持有者具有较高层次的Windows NT、微软操作系统和相关产品的知识。获得MCSE证书需要有良好的计算机基础知识，还需要对操作系统、网络系统和信息化产品有深刻全面的了解，需要经过认真甚至是艰苦的学习和实践过程。由于该证书取之不易，一旦获得便足以说明证书持有者的技术水平，所以该证书得到了普遍的认可，几乎成为许多国外大公司录用人员、提升职务，甚至是提高薪金的依据，所以MCSE考生人数逐年上升。

要获得MCSE证书，需要通过4项必考科目和两项自选科目考试。具体情况如下：

表0.1 MCSE考试内容与可选科目

必考科目	考试内容	可选择科目
#1	网络操作系统	Windows NT Server 3.51或Windows NT 4.0
#2	企业网系统应用	Windows NT Server (3.51或4.0) in the Enterprise
#3	网络基础知识	Networking Essentials
#4	微软操作系统知识	Windows 3.1、Windows 3.11 for Workgroups Windows 95、Windows NT Workstation
自选科目	考试内容	可选择科目
#5	微软信息服务器产品	SQL Server、SNA Server、Exchange Server或 Internet Information Server等十余个科目
#6	微软公司有关TCP/IP 方面的产品	TCP/IP

注释：表中号码#1、#2等仅为叙述方便，与微软考试科目编号无关

为配合国内读者学习掌握计算机基础知识、操作系统、网络系统及信息化产品，我们推出了两套MCSE考试系列丛书，即：

- MCSE学习指南系列（中文译本），目前推出7种
- MCSE考试指南系列（英文原版），目前推出5种

MCSE学习指南系列

由于MCSE考试的技术水平高，要求考生概念清晰、基础知识牢固、能灵活地运用所学知识，并具有丰富的实践经验。显而易见，MCSE的学习、考试用书也应具备上述特点，介绍MCSE的书籍不但适用于MCSE考生，同时也适用于希望学习、掌握相关知识的普通技术人员。为此我们翻译了本系列丛书，并首先推出其中的7本，具体如下：

表0.2 MCSE系列丛书（学习指南系列）

中文书名	丛书编号	适用的考试科目
MCSE: Windows NT Server 4学习指南	MCSE系列丛书之一	表0.1 #1
MCSE: NT Server 4 in the Enterprise学习指南	MCSE系列丛书之二	表0.1 #2
MCSE: 网络基础学习指南	MCSE系列丛书之三	表0.1 #3
MCSE: Windows NT Workstation学习指南	MCSE系列丛书之四	表0.1 #4
MCSE: Windows 95学习指南	MCSE系列丛书之五	表0.1 #4
MCSE: TCP/IP学习指南	MCSE系列丛书之六	表0.1 #6
MCSE: Microsoft Internet Information Server学习指南	MCSE系列丛书之七	表0.1 #5

MCSE考试指南系列

如果说“学习指南”系列（MCSE系列丛书之一至之七）的特点是，十分注重原理介绍、概念阐述和外沿知识的说明；那么，新的考试指南系列则注意了必须了解的知识、结论，强调了正确的操作方法和实际处理问题的能力，同时介绍了许多MCSE考试的经验和技巧，并附有考试例题。

考虑到考试指南系列书注重结论、致力于支持读者通过MCSE考试等特点，加之MCSE考生英语水平普遍很高（考试本身需用英语完成），我们本次以英文“重印”形式推出了五本“考试指南”系列书，详见表0.3所示。

表0.3 MCSE系列丛书（考试指南系列）

中文书名	丛书编号	适用的考试科目
MCSE: NT Server 4考试指南	MCSE系列丛书之八	表0.1 #1
MCSE: NT Server 4 in the Enterprise考试指南	MCSE系列丛书之九	表0.1 #2
MCSE: Networking Essentials考试指南	MCSE系列丛书之十	表0.1 #3
MCSE: NT Workstation 4考试指南	MCSE系列丛书之十一	表0.1 #4
MCSE: TCP/IP for NT Server 4考试指南	MCSE系列丛书之十二	表0.1 #6

由于采用“重印”方式，即从SYBEX公司购买版权，同时获取该书的文本文件和图形文件，在国内重新排版印刷，这样做的优势在于：

- 降低了图书价格，重印书比原版图书便宜许多。
- 缩短了制作周期，重印书与原版书的“出版时差”不足两个月。
- 提高了制作质量，使用原文件排版，印刷质量明显优于各种影印外文原版书。

综上所述，不难想象，该系列书会再次得到广大读者的欢迎。

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

Introduction

One of the greatest challenges facing corporate America today is finding people who are qualified to manage corporate computer networks. Many companies have Microsoft networks, which run Windows 95, Windows NT, and other Microsoft BackOffice products (such as Microsoft SQL Server and Systems Management Server).

Microsoft developed its Microsoft certification program to certify those people who have the skills to work with Microsoft products and networks. The most coveted certification is MCSE, or Microsoft Certified Systems Engineer.

Why become an MCSE? The main benefits are that you will have much greater earning potential and that an MCSE carries high industry recognition. Certification can be your key to a new job or a higher salary—or both.

So what's stopping you? If it's because you don't know what to expect from the tests or you are worried that you might not pass, then this book is for you.

Is This Book for You?

This book is intended for those who already have some experience with Microsoft networks. It is especially well suited for:

- Students using courseware or taking a course to prepare for the exam, who would like to supplement their study material with test-based practice questions.
- Network engineers who have worked with Microsoft networks but want to make sure there are no gaps in their knowledge.
- Anyone who has studied for the exams—by using self-study guides, by participating in computer-based training, by taking classes, or by getting on-the-job experience—and wants to make sure that they're adequately prepared.

What Does This Book Cover?

This book provides you with the key to passing Exam 70-058, Networking Essentials. It covers exactly what you need to know, without wasting time on background material or detailed explanations. This book prepares you for the exam in the shortest amount of time possible.

In order to help you prepare for certification exams, Microsoft provides a list of exam objectives for each test. This book is based on the objectives specified for Exam 70-058.

For the Networking Essentials exam, the objectives are designed to measure

your ability to design, administer, and troubleshoot Microsoft networks. The first four units in this book correspond to the Microsoft objectives groupings: Standards and Terminology, Planning, Implementation, and Troubleshooting. The fifth unit is a final review, which contains test questions pertaining to all the previous units.

In this book, you will find at-a-glance review sections, more than 400 study questions, and over 200 sample test questions to bolster your knowledge of the information relevant to each exam objective.

The review sections present the information concisely in easy-to-skim formats. The study questions are in various formats: fill-in-the-blank, true/false, list, and so on. The sample test questions are multiple-choice — just like the actual exam questions. In fact, some are even more difficult than what you'll find on the exam. If you can pass the sample tests at the end of each unit and the final review at the end of the book, you'll know that you're ready to take the test.

Understanding Microsoft Certification

Microsoft offers several levels of certification for network professionals working with Microsoft products:

- Microsoft Certified Professional (MCP)
- Microsoft Certified Systems Engineer (MCSE)
- Microsoft Certified Professional + Internet
- Microsoft Certified Systems Engineer + Internet
- Microsoft Certified Trainer (MCT)

The one you choose depends on your area of expertise and your career goals.



For the most up-to-date certification information, visit Microsoft's Web site at www.microsoft.com/train_cert.

Microsoft Certified Professional (MCP)

MCP certification is for individuals with expertise in one specific area. MCP certification is often a stepping stone to MCSE certification and allows you some of the benefits of Microsoft certification after just one exam.

By passing one core exam (an operating system exam), you become an MCP.

Microsoft Certified Systems Engineer (MCSE)

Becoming an MCSE requires commitment. You need to complete all of the steps required for certification. Passing the exams shows that you meet the high standards that Microsoft has set for MSCEs.



The following list applies to the Windows NT 4.0 track. Microsoft still supports a track for 3.51, but 4.0 certification is more desirable because it applies to the current operating system.

To become an MCSE, you must pass a series of six exams: four core requirements and two electives. The core exams are:

- Networking Essentials (waived for Certified Novell Engineers, or CNEs)
- Implementing and Supporting Microsoft Windows NT Workstation 4.0, or Installing and Supporting Windows 95
- Implementing and Supporting Microsoft Windows NT Server 4.0
- Implementing and Supporting Microsoft Windows NT Server 4.0 in the Enterprise

Some of the electives include:

- Internetworking with Microsoft TCP/IP on Microsoft Windows NT 4.0
- Implementing and Supporting Microsoft Internet Information Server 4.0
- Implementing and Supporting Microsoft Exchange Server 5.5
- Implementing and Supporting Microsoft SNA Server 4.0
- Implementing and Supporting Microsoft Systems Management Server 1.2
- Implementing a Database Design on Microsoft SQL Server 6.5
- System Administration for Microsoft SQL Server 6.5

Microsoft Certified Trainer (MCT)

As an MCT, you can deliver Microsoft certified courseware through official Microsoft channels.

The MCT certification is more costly than the other types of certification because in addition to passing the exams, you must sit through the official Microsoft courses. You also need to submit an application that must be approved by Microsoft. The number of exams you are required to pass depends on the number of courses that you want to teach.

Preparing for the MCSE Exams

To prepare for the MCSE certification exams, you should try to work with the product as much as possible. In addition, there are a variety of resources from which you can learn about the products and exams:

- You can take instructor-led courses.
- Online training is an alternative to instructor-led courses. This is a useful option for people who cannot find any courses in their area or who do not have the time to attend classes.
- If you prefer to use a book to help you prepare for the MCSE tests, you can choose from a wide variety of publications. These range from complete

study guides (such as the Network Press *MCSE Study Guide* series, which cover the core MCSE exams and key electives) through test-preparedness books similar to this one.

After you have completed your courses, training, or study guides, you'll find the *MCSE Test Success* books an excellent resource for making sure that you are prepared for the test. You will discover if you've got it covered or if you still need to fill in some holes.

Scheduling and Taking an Exam

When you've decided that you're ready to take an exam, call Prometric Testing Centers at (800) 755-EXAM (800-755-3926) to find the closest testing center. Before you call, get out your credit card because each exam costs \$100. (If you've used this book to prepare yourself thoroughly, chances are you'll have to shell out that \$100 only once!)

You can schedule the exam for a time that is convenient for you. The exams are downloaded from Prometric to the testing center, and you show up at your scheduled time and take the exam on a computer.

Once you complete the exam, you will know right away whether you have passed or not. At the end of the exam, you will receive a score report. The report will list the areas that you were tested on and how you performed. If you pass the exam, you don't need to do anything else—Prometric uploads the test results to Microsoft. If you don't pass, you'll need to try again. But at least you will know from the score report where you did poorly, so you can study that particular information more carefully.

Test-Taking Hints

If you know what to expect, your chances of passing the exam will be much greater. The following are some tips that can help you achieve success.

Get There Early and Be Prepared This is your last chance to review. Bring your *MCSE Test Success* book and scan any material areas you feel unsure of. If you need a quick drink of water or a visit to the restroom, take the time before the exam. Once your exam starts, it will not be paused for these needs.

When you arrive for your exam, you will be asked to present two forms of ID. You will also be asked to sign a piece of paper verifying that you understand the testing rules (for example, the rule that says that you will not cheat on the exam).

Before you start the exam, you will have an opportunity to take a practice exam. It is not related to Windows NT and is simply offered so that you will have a feel for the exam-taking process.

What You Can and Can't Take with You These are closed-book exams. The only thing that you can take in is scratch paper provided by the testing center.

Use this paper as much as possible to diagram the questions. Many times, diagramming questions will help make the answers clear. You will need to give this paper back to the test administrator at the end of the exam.

Many testing centers are very strict about what you can take into the testing room. Some testing centers will not even allow you to bring in items like zipped-up purses. If you feel tempted to take in any outside materials, be aware that many testing centers use monitoring devices, such as video and audio equipment (so don't swear, even if you're alone in the room!).

Your Approach to the Test As you take the test, if you know the answer to a question, fill it in and move on. If you're not sure of the answer, mark your best guess, then "mark" the question.

At the end of the exam, you can review the questions. Depending on the amount of time remaining, you can then view all of the questions again, or you can view only the questions that you were unsure of. I always like to double-check all of my answers, just in case I misread any of the questions on the first pass. (Sometimes half of the battle is in trying to figure out exactly what the question is asking you.) Also, sometimes I find that a related question provides a clue for a question that I was unsure of.

Be sure to answer all questions. Unanswered questions are scored as incorrect and will count against you. Also, make sure that you keep an eye on the remaining time so that you can pace yourself accordingly.

If you do not pass the exam, note everything that you can remember while the exam is still fresh in your mind. This will help you prepare for your next try. Although the next exam will not be exactly the same, the questions will be similar, and you don't want to make the same mistakes.

After You Become Certified

Once you become an MCSE, Microsoft kicks in some goodies, including:

- A one-year subscription to Microsoft TechNet, a valuable CD collection that contains Microsoft support information.
 - A one-year subscription to the Microsoft Beta Evaluation program, which is a great way to get your hands on new software. Be the first kid on the block to play with new and upcoming software.
 - Access to a secured area of the Microsoft Web site that provides technical support and product information. (This benefit is also available with MCP certification.)
 - Permission to use the Microsoft Certified Professional logos (each certification has its own logo), which look great on letterhead and business cards.
 - An MCP certificate (you will get a certificate for each level of certification you reach), suitable for framing and sending copies to Mom.
-

- A one-year subscription to *Microsoft Certified Professional Magazine*, which provides information on professional and career development.

How to Use This Book

This book is designed to help you prepare for the MCSE exam. It reviews each objective and relevant test-taking information, and offers you a chance to test your knowledge through study questions and sample tests.

For each unit:

1. Review the exam objectives list at the beginning of the unit. (You may want to check the Microsoft Train_Cert Web site to make sure that the objectives haven't changed.)
2. Read through or scan the reference material that follows the objectives list. This material is organized according to the objectives and is designed to help you brush up on the information that you need to know for the exam.
3. Review your knowledge by answering the study questions. These are straightforward questions designed to test your knowledge of the specific topic. You'll find the answers to the study questions in the Study Question and Sample Test Answers appendix at the back of the book.
4. Once you feel sure of your knowledge of the area, take the sample test. The sample test's content and style matches that of the real exam. Set yourself a time limit based on the number of questions: A general rule is that you should be able to answer 20 questions in 30 minutes. When you've finished, check your answers against those in the Study Question and Sample Test Answers appendix in the back of the book. If you answer at least 85 percent of the questions correctly within the time limit (the first time you take the sample test), you're in good shape. To really prepare, you should note the questions you missed and be able to answer 95 to 100 percent correctly on subsequent tries.
5. After you successfully complete Units 1 through 4, you're ready for the Final Review in Unit 5. Allow yourself 90 minutes to complete the test of 58 questions. If you answer 85 percent of the questions correctly on the first try, you're well prepared. If not, go back and review the areas you struggled with. Then take the test again.
6. Immediately before you take the Networking Essentials exam, scan the reference material at the beginning of each unit to refresh your memory.

At this point, you are well on your way to becoming certified!

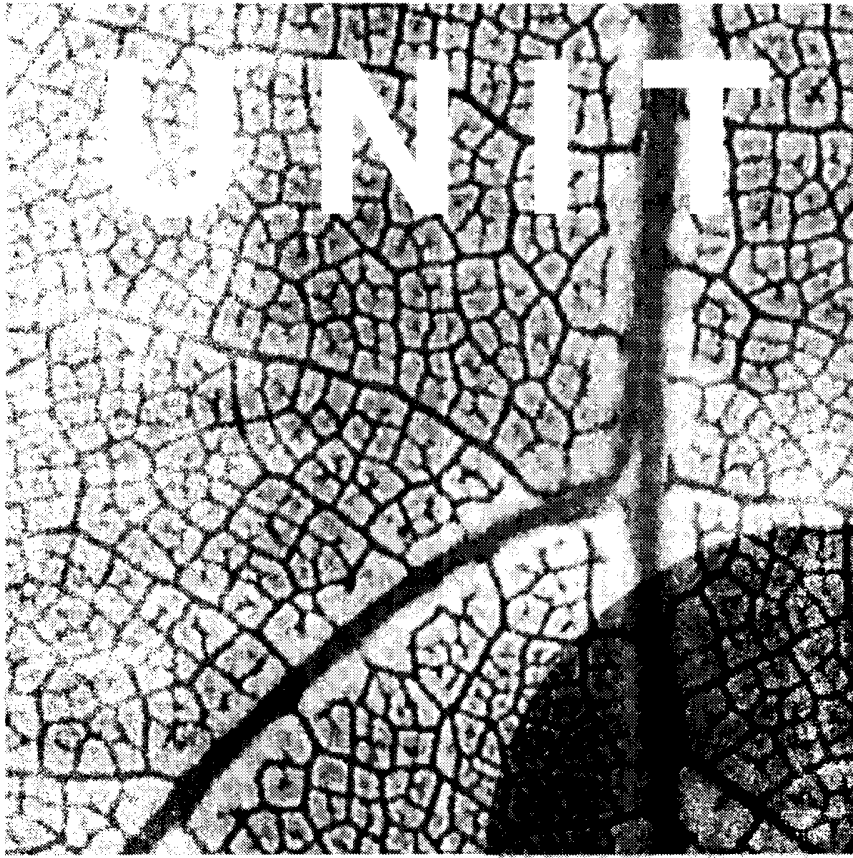
Good luck!

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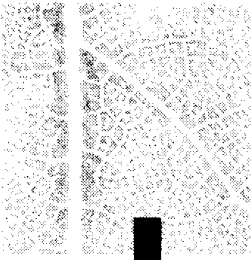
Standards and Terminology

Test Objectives: Standards and Terminology

-  Define common networking terms for LANs and WANs.
-  Compare a file-and-print server with an application server.
-  Compare a client-server network with a peer-to-peer network.
-  Compare user-level security with access permission assigned to a shared directory on a server.
-  Compare the implications of using connection-oriented communications with connectionless communications.
-  Distinguish whether SLIP or PPP is used as the communications protocol for various situations.
-  Define the communication devices that communicate at each level of the OSI model.
-  Describe the characteristics and purpose of the media used in IEEE 802.3 and IEEE 802.5 standards.
-  Explain the purpose of NDIS and Novell ODI network standards.



Exam objectives are subject to change at any time without prior notice and at Microsoft's sole discretion. Please visit Microsoft's Training & Certification website (www.microsoft.com/Train_Cert) for the most current exam objectives listing.



In this unit, we'll review the standards and terminology used in today's networking environment. We'll begin with some definitions of common networking terms, and then describe types of network servers and networks. Next, we'll review types of communications methods and the OSI reference model. Then we'll go over the IEEE standards for Ethernet and Token Ring networks. Finally, we'll discuss the NDIS and ODI network standards.

Defining Networking Terms

We'll define common terms in four categories: network description, network topology, network protocol, and networking service.

Network Description Terms

The following are the terms commonly used when describing a network, beginning with the most basic one:

Network A group of interconnected computers that share resources and information. For example, some hardware resources typically shared on a network are printers, fax-modems, and hard disks.

Transmission media The physical pathway on which the computers are connected. Cable and wireless media can connect the computers in a network.

Stand-alone computer A computer that is not connected to a network.

Local area network (LAN) A group of computers interconnected within a building or campus (see Figure 1.1). For example, a LAN may consist of computers located on a single floor of a building or it might link all the computers in a small company.

Metropolitan area network (MAN) A network of LANs that covers a city or large campus environment (see Figure 1.2).

Wide area network (WAN) A network consisting of computers or LANs connected across a distance (see Figure 1.3). WANs can cover small to large distances using different physical topologies, such as telephone lines, fiber-optic cabling, satellite transmissions, and microwave transmissions.

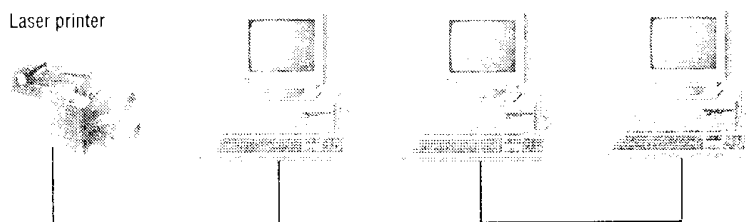


FIGURE 1.1 An example of a local area network (LAN)

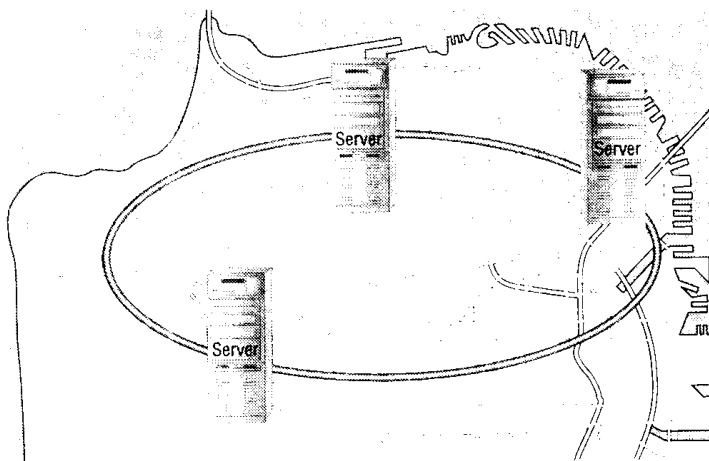


FIGURE 1.2 An example of a metropolitan area network (MAN)

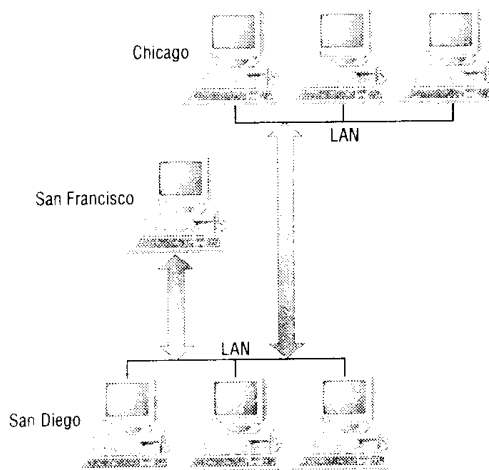


FIGURE 1.3 An example of a wide area network (WAN)

Network Topology Terms

Network *topologies* are the physical cable or transmitters on the network. The following are the different types of physical topologies:

Bus All computers are connected with a single cable with a terminator on each end. An example is an Ethernet network connected with Thinnet coaxial (10Base2) cable.