MCSE: Windows 2000 Network Infrastructure Design

考试指南

（英文原版）

考试号 70-221

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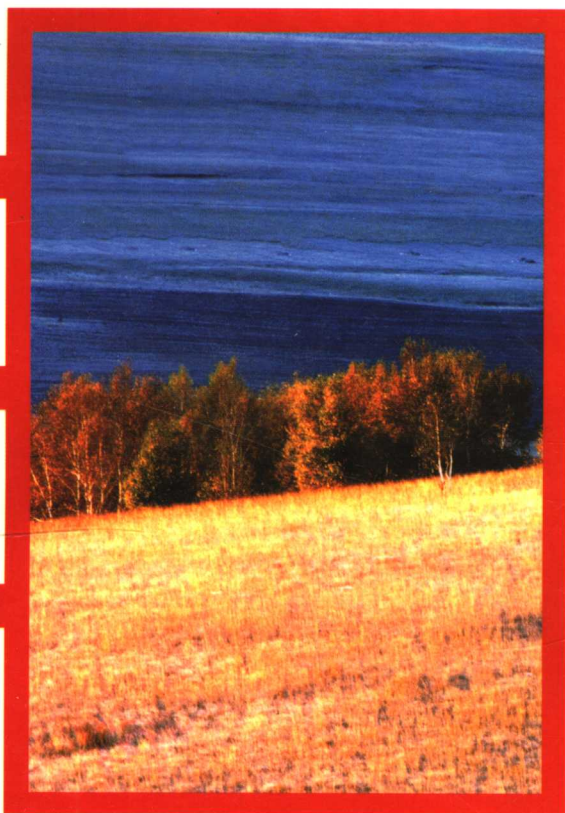
MCSE: Windows 2000 Network Infrastructure
Design Exam Notes

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Windows 2000 MCSE系列丛书出版说明

近几年来，微软的认证考试已成为计算机与网络行业中衡量技术人员水平的重要考试，得到微软的认证证书已成为IT业求职、加薪的有效证明。

随着微软Windows 2000操作系统的推出，微软在MCP（Microsoft Certified Professional，微软认证的专业人员）和MCSE（Microsoft Certified System Engineer，微软认证的系统工程师）认证策略上做了重大调整，考试的难度增加，使微软证书的"含金量"进一步提高。

新的Windows 2000微软系统工程师（MCSE）已经成为IT从业人员追求的新热点。在未来的几年中，世界各地将有数以百万计的企业使用Windows 2000操作系统，这将需要大量的咨询、服务公司和技术支持人员。得到Windows 2000的MCSE证书，将会证明你有能力设计、维护、管理最新的网络操作系统。一个公司具有多少持有MCSE证书的人员，也是衡量该公司技术实力的一项重要指标。

为帮助国内的技术人员掌握微软的新技术，顺利通过新的MCSE认证考试，我们在出版了针对Windows NT 4.0的MCSE考试用书的基础之上，再次出版了针对Windows 2000的MCSE学习指南（中文译本）和MCSE考试指南（英文原版）。

新的MCSE考试科目

Windows 2000的MCSE考试科目较以前NT 4.0的考试有很大变化，以前的考试科目只有6门，其中4门必考，2门选考。新的MCSE考试科目有7门，包括4门必考的核心考试、1门可选的核心考试、2门自选考试。具体情况见表0.1。

表0.1   Windows 2000 MCSE考试科目

考试号	科目	内容
四门必考的核心考试：		
70-210	Installing, Configuring and Administering Microsoft Windows 2000 Professional	Microsoft Windows 2000 Professional的安装配置与管理
70-215	Installing, Configuring and Administering Microsoft Windows 2000 Server	Microsoft Windows 2000 Server的安装配置与管理
70-216	Implementing and Administering a Microsoft Windows 2000 Network Infrastructure	Microsoft Windows 2000 网络架构的实施与管理
70-217	Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure	微软Microsoft Windows 2000目录服务架构的实施与管理

考试号	科目	内容
一门可选的核心考试（从三门核心考试中任选一门）：		
70-219	Designing a Microsoft Windows 2000 Directory Services Infrastructure	设计Microsoft Windows 2000 目录服务基础架构
70-220	Designing Security for a Microsoft Windows 2000 Network	设计Microsoft Windows 2000 网络安全方案
70-221	Designing a Microsoft Windows 2000 Network Infrastructure	设计Microsoft Windows 2000 网络基础架构
二门任选考试：		
可以从70-219、70-220、70-221三门中未作为核心考试的科目中选，还可以选70-222以及所有当前的MCSE选修课程。		
70-222	Upgrading from Microsoft Windows NT 4.0 to Microsoft Windows 2000	从NT 4升级到Windows 2000

对于已取得Windows NT 4.0 MCSE或MCP的人员，微软提供了相应的"升级"考试。如果考生已通过三门Windows NT 4.0考试（70-067、70-068和70-073），可以选择参加"升级"考试（70-240：Microsoft Windows 2000 Accelerated Exam for MCPs Certified on Microsoft Windows NT 4.0，即微软为已通过Windows NT 4.0的MCP提供的升级到Windows 2000的加速考试）。如果通过70-240考试，可以免考Windows 2000核心考试（70-210、70-215、70-216和70-217），但70-240的考试有效期为2001年12月30日。

Windows 2000 MCSE考试指南

为帮助国内考生攻克Windows 2000 MCSE考试，我们再次以英文原版的方式出版了Windows 2000 MCSE考试指南系列丛书，见表0.2。

表0.2   Windows 2000 MCSE考试指南系列

书名	适应的考试	考试号
MCSE：Windows 2000 Professional考试指南	Installing, Configuring and Administering Microsoft Windows 2000 Professional	70-210
MCSE：Windows 2000 Server考试指南	Installing, Configuring and Administering Microsoft Windows 2000 Server	70-215
MCSE：Windows 2000 Network Infrastructure Administration考试指南	Implementing and Administering a Microsoft Windows 2000 Network Infrastructure	70-216
MCSE：Windows 2000 Directory Services Administration考试指南	Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure	70-217
MCSE：Accelerated Windows 2000考试指南	Microsoft Windows 2000 Accelerated for MCPs Certified on Microsoft Windows NT 4.0	70-240

书名	适应的考试	考试号
MCSE：Windows 2000 Directory Services Design考试指南	Designing a Microsoft Windows 2000 Directory Services Infrastructure	70-219
MCSE：Windows 2000 Network Security Design考试指南	Designing Security for a Microsoft Windows 2000 Network	70-220
MCSE：Windows 2000 Network Infrastructure Design考试指南	Designing a Microsoft Windows 2000 Network Infrastructure	70-221
MCSE：Windows 2000 Upgrade考试指南 （将于2001年1月出版）	Upgrading from Microsoft Windows NT 4.0 to Microsoft Windows 2000	70-222

Windows 2000 MCSE学习指南

为使考生能全面、牢固地掌握MCSE各门课程内容，我们引进、翻译了MCSE的学习指南系列丛书。这套书的特点是注重原理介绍、概念阐述清晰，使读者能全面掌握所学知识，并可灵活地运用到实践中。这套书将于2000年12月相继出版，见表0.3。

表0.3　Windows 2000 MCSE学习指南系列

书名	适应的考试	考试号
MCSE：Windows 2000 Professional学习指南	Installing, Configuring and Administering Microsoft Windows 2000 Professional	70-210
MCSE：Windows 2000 Server学习指南	Installing, Configuring and Administering Microsoft Windows 2000 Server	70-215
MCSE：Windows 2000 Network Infrastructure Administration学习指南	Implementing and Administering a Microsoft Windows 2000 Network Infrastructure	70-216
MCSE：Windows 2000 Directory Services Administration学习指南	Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure	70-217
MCSE：Accelerated Windows 2000学习指南	Microsoft Windows 2000 Accelerated for MCPs Certified on Microsoft Windows NT 4.0	70-240
MCSE：Windows 2000 Directory Services Design学习指南	Designing a Microsoft Windows 2000 Directory Services Infrastructure	70-219
MCSE：Windows 2000 Network Security Design学习指南	Designing Security for a Microsoft Windows 2000 Network	70-220
MCSE：Windows 2000 Network Infrastructure Design学习指南	Designing a Microsoft Windows 2000 Network Infrastructure	70-221
MCSE：Windows 2000 Upgrade学习指南	Upgrading from Microsoft Windows NT 4.0 to Microsoft Windows 2000	70-222

To KL—thanks for hanging with me.

Acknowledgments

With grateful acknowledgment of all those who helped me with these books. I'm especially grateful to the Sybex associate publisher in charge of the study guides, Neil Edde. He was the one who graciously gave me my start in writing computer books—and I feel that I'm privileged to write for the best computer book company on earth.

I'd also like to thank the editors of this book: Elizabeth Hurley, associate developmental editor; Julie Sakaue, editor; Liz Burke, production editor; as well as Joshua Konkle, the technical editor who helped with this book. I'd also like to acknowledge the artists and layout people, Tony Jonick and Judy Fung, without whom a book would have no pizzazz.

You can't begin to know the patience of a wife who must put up with someone who comes home from work tired, hungry, and grumpy and who must hit the word processor for a good solid two hours in order to get the next chapter in on time. Thank you so much Kimmie Lou for your loyalty, endurance, and patience with my second career—my first love.

Last, but certainly not least, I want to thank God, the giver of gifts and of life.

Introduction

Microsoft's new Microsoft Certified Systems Engineer (MCSE) track for Windows 2000 is the premier certification for computer industry professionals. Covering the core technologies around which Microsoft's future will be built, the new MCSE certification is a powerful credential for career advancement.

This book has been developed, in cooperation with Microsoft Corporation, to give you the critical skills and knowledge you need to prepare for one of the core requirements of the new MCSE certification program, Designing a Microsoft Windows 2000 Network Infrastructure. You will find the information you need to acquire a solid understanding of the design of a Windows 2000 network infrastructure, to prepare for Exam 70-221: Designing a Windows 2000 Network Infrastructure, and to progress toward MCSE certification.

Is This Book for You?

The MCSE Exam Notes books were designed to be succinct, portable exam review guides that can be used either in conjunction with a more complete study program (book, CBT courseware, 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 provide sufficient coverage of these topics.

Perhaps you're already familiar with the features and functionality of Windows 2000. The thought of paying lots of money for a specialized MCSE 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 have walked confidently into test centers only to walk sheepishly out of them after failing an MCSE exam. As they discovered, there's the Microsoft of the real world and the Microsoft of the MCSE exams. It's our goal with these 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 MCSE test makers in Redmond.

Or perhaps you're relatively new to the world of Microsoft networking, drawn to it by the promise of challenging work and higher salaries. You've just waded through an 800-page MCSE Windows 2000 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 Microsoft 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 identify quickly those areas you know best and those that require more in-depth review.

NOTE The goal of the Exam Notes series is to help MCSE candidates familiarize themselves with the subjects on which they can expect to be tested in the MCSE exams. For complete, in-depth coverage of the technologies and topics involved, we recommend the MCSE Windows 2000 Study Guide series from Sybex.

How Is This Book Organized?

As mentioned above, this book is organized according to the official exam objectives list prepared by Microsoft for Exam 70-221. The chapters coincide to the broad objectives groupings, such as Designing a Wide Area Network Infrastructure. These groupings are also reflected in the organization of the MCSE exams themselves.

Within each chapter, the individual exam objectives are addressed in turn. Each objective's coverage is further divided into the following sections of information:

Critical Information

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

Exam Essentials

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

Key Terms and Concepts

Here you'll find a mini-glossary of the most important terms and concepts related to the specific objective. This list will help you understand what the technical words mean within the context of the related subject matter.

Sample Questions

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

How Do You Become an MCSE?

Attaining MCSE certification has always been a challenge. In the past, people could acquire detailed exam information—even most of the exam questions—from online "brain dumps" and third-party "cram" books or software products. For the new MCSE exams, however, this simply will not be the case.

To avoid the "paper-MCSE syndrome" (a devaluation of the MCSE certification because unqualified individuals manage to pass the exams), Microsoft has taken strong steps to protect the security and integrity of the new MCSE track. Prospective MSCEs will need to complete a course of study that provides not only detailed knowledge of a wide range of topics, but true skills derived from working with Windows 2000 and related software products.

In the new MCSE program, Microsoft is heavily emphasizing hands-on skills. Microsoft has stated that "nearly half of the core required exams' content demands that the candidate have troubleshooting skills acquired through hands-on experience and working knowledge."

Fortunately, if you are willing to dedicate time and effort with Windows 2000, you can prepare for the exams by using the proper tools. If you work through this book and the other books in this series, you should successfully meet the exam requirements.

TIP This book is part of a series of MCSE Study Guides and Exam Notes published by Sybex that covers the five core requirements as well as the electives you need to complete your MCSE track.

Exam Requirements

Successful candidates must pass a minimum set of exams that measure technical proficiency and expertise.

- Candidates for MCSE certification must pass seven exams, including four core operating system exams, one design exam, and two electives.

- Candidates who have already passed three Windows NT 4 exams (70-067, 70-068, and 70-073) may opt to take an "accelerated" exam plus one core design exam and two electives.

NOTE If you do not pass the accelerated exam after one attempt, you must pass the five core requirements and two electives.

The following tables show the exams that a new certification candidate must pass. *All* of these exams are required:

Exam #	Title	Requirement Met
70-216	Implementing and Administering a Microsoft Windows 2000 Network Infrastructure	Core (Operating System)
70-210	Installing, Configuring, and Administering Microsoft Windows 2000 Professional	Core (Operating System)
70-215	Installing, Configuring, and Administering Microsoft Windows 2000 Server	Core (Operating System)

Exam #	Title	Requirement Met
70-217	Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure	Core (Operating System)

One of these exams is required:

Exam #	Title	Requirement Met
70-219	Designing a Microsoft Windows 2000 Directory Services Infrastructure	Core (Design)
70-220	Designing Security for a Microsoft Windows 2000 Network	Core (Design)
70-221	Designing a Microsoft Windows 2000 Network Infrastructure	Core (Design)

Two of these exams are required:

Exam #	Title	Requirement Met
70-219	Designing a Microsoft Windows 2000 Directory Services Infrastructure	Elective
70-220	Designing Security for a MicrosoftWindows 2000 Network	Elective
70-221	Designing a Microsoft Windows 2000 Network Infrastructure	Elective
Any current MCSE elective	Exams cover topics such as Exchange Server, SQL Server, Systems Management Server, Internet Explorer Administrators Kit, and Proxy Server (new exams are added regularly)	Elective

NOTE For a more detailed description of the Microsoft certification programs, including a list of current MCSE electives, check Microsoft's Training and Services Web site at www.microsoft.com/trainingandservices.

Exam Registration

You may take the exams at any of more than 1,000 Authorized Prometric Testing Centers (APTCs) and VUE Testing Centers around the world. For the location of a testing center near you, call Sylvan Prometric at (800) 755-EXAM (755-3926), or call VUE at (888) 837-8616. Outside the United States and Canada, contact your local Sylvan Prometric or VUE registration center.

You should determine the number of the exam you want to take, and then register with the Sylvan Prometric or VUE registration center nearest to you. At this point, you'll be asked for advance payment for the exam. The exams are $100 each. Exams must be taken within one year of payment. You can schedule exams up to six weeks in advance or as late as one working day prior to the date of the exam. You can cancel or reschedule your exam if you contact the center at least two working days prior to the exam. Same-day registration is available in some locations, subject to space availability. Where same-day registration is available, you must register a minimum of two hours before test time.

TIP You may also register for your exams online at www.sylvanprometric.com or www.vue.com.

When you schedule the exam, you'll be provided with instructions regarding appointment and cancellation procedures, ID requirements, and information about the testing center location. In addition, you'll receive a registration and payment confirmation letter from Sylvan Prometric or VUE.

Microsoft requires certification candidates to accept the terms of a non-disclosure agreement before taking certification exams.

What the Designing a Windows 2000 Network Infrastructure Exam Measures

This exam is going to test your ability to recognize ways that you can provide connectivity to outside users. For example, you'll be tested in Virtual Private Network (VPN) installations—security, authentication, the why and how of building a VPN. You'll also be tested on your understanding of Routing and Remote Access Services (RRAS), Windows 2000's capability of providing connectivity for telecommuting users. Windows 2000 Server can function as a router—you'll be tested on router protocols and why and when you'd use Windows 2000 routers.

There are sections in this book on DHCP, WINS, DNS, Dfs, and other Windows 2000 TCP/IP features. Also, you'll be asked to test your knowledge of TCP/IP subnetting principles.

This book delves into network hardware and infrastructures. The goal of the design test is to help the administrator understand the enterprise concept—that there's more to the network than simply the server farm, there's so much more.

Tips for Taking Your Exam

Here are some general tips for taking your exam successfully:

- 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 be tempted to jump to an early conclusion. Make sure you know *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 questions first. This will improve your odds if you need to make an educated guess.

- This test has many exhibits (pictures). It can be difficult, if not impossible, to view both the questions and the exhibit simulation on the 14- and 15-inch screens usually found at the testing centers. Call around to each center and see if they have 17-inch monitors avail-

able. If they don't, perhaps you can arrange to bring in your own. Failing this, some have found it useful to quickly draw the diagram on the scratch paper provided by the testing center and use the monitor to view just the question.

- You are allowed to use the Windows calculator during your test. However, it may be better to memorize a table of the subnet addresses and to write it down on the scratch paper supplied by the testing center before you start the test.

Once you've completed an exam, you'll be given immediate, online notification of your pass or fail status. You'll also receive 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 Microsoft within five working days after you take the test. You don't need to send your score to Microsoft. If you pass the exam, you'll receive confirmation from Microsoft, typically within two to four weeks.

Contact Information

To find out more about Microsoft Education and Certification materials and programs, to register with Sylvan Prometric, or to get other useful information, check the following resources. Outside the United States or Canada, contact your local Microsoft office or Sylvan Prometric testing center.

Microsoft Certified Professional Program—(800) 636-7544

Call the MCPP number for information about the Microsoft Certified Professional program and exams, and to order the latest Microsoft Roadmap to Education and Certification.

Sylvan Prometric Testing Centers—(800) 755-EXAM

Contact Sylvan to register to take a Microsoft Certified Professional exam at any of more than 800 Sylvan Prometric testing centers around the world.

Microsoft Certification Development Team—http://www.microsoft.com/trainingandservices

Contact the Microsoft Certification Development Team through their Web site to volunteer for participation in one or more exam development phases or to report a problem with an exam. Address written correspondence to the Certification Development Team, Microsoft Education and Certification, One Microsoft Way, Redmond, WA 98052.

Microsoft TechNet Technical Information Network—(800) 344-2121

The is an excellent resource for support professionals and system administrators. Outside the United States and Canada, call your local Microsoft subsidiary for information.

How to Contact the Publisher

Sybex welcomes reader feedback on all of its titles. Visit the Sybex Web site at 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.