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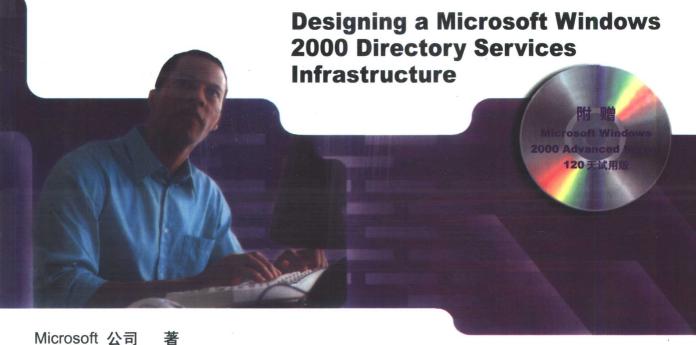
# **Microsoft** Press

MCSE Training

Exam 70-219

Microsoft® **Windows 2000 Directory Services** 

基础结构设计(影印版)



- ► MCP70-219 考试 (Designing a Microsoft Windows 2000 Directory Services Infrastructure) 微软指定教
- 有挑战性的案例学习和设计技 能训练,可自主安排学习进度
- 涵盖认证考试所要求的概念、过程和 任务, 获取现实的系统支持技能

北京大学出版社

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### 内容简介

本书为微软指定教材。通过学习本书,您将能够进行正确的目录服务结构设计决策,同时为 MCP 考试做准备。本书提供了一系列的案例学习和指导,可帮您获得为 Microsoft Windows 2000 网络进行 Directory Services 基础结构设计的经验。在您获得实际设计技能的同时,也为 MCP 70-219 考试作好了准备。

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# 出版前言

如果用一个成语来概括国内计算机图书市场的现状,当谓之"汗牛充栋"。然而,如果您是一位从事计算机应用系统开发或管理的中、高级专业人士,很可能发现这貌似种类 齐全的计算机图书中,为您量身定做的并不多见。

依据多年从事计算机图书工作所积累的经验,以及与 IT 领域广泛而深入的接触所获取的信息,我们认识到,具有相当的专业深度和技术前沿性的图书,是计算机专业人员的迫切需要,当然,也是我们从事计算机图书工作、服务专业领域的一大着眼点。

基于这一点,2000 年元月,我们与微软出版社(Microsoft Press)达成合作协议,成立微软图书影印中心,独家代理微软出版社图书影印版在中国大陆的出版、发行,为 IT 业界提供及时的专业技术服务。选题和策划上的匠心独运,使得我们的影印书成为计算机图书中的标新立异者。这里,有四大特色值得读者朋友予以关注:

首先,这是微软出版社第一次授权在中国大陆影印、发行它的版权书。在选题上,可以说独辟蹊径。在内容上,立足技术广度和深度,系统推介微软产品。所有这些,都是目前国内一般计算机图书所无法比拟的。

其次,我们的理念是为国内计算机专业人员学习前沿性的微软技术提供服务。为此, 我们不但与微软公司紧密协作与沟通,及时掌握微软最新技术动向,而且组织了精干的工作人员,倾力于微软影印书的出版和发行。

再者,微软影印书主要面向中、高级专业人员,印量有限。这类书的读者对象有较强的针对性,一般来说,包括 IT 决策人员,中、高级开发人员,以及中、高级系统管理人员。因而,我们将每套书的印数控制在 1000~2000 册之间。

最后,微软图书影印版几乎与原版书保持同步发行,最大限度地满足了国内读者跟踪 微软最新技术的需求。软件升级越来越快,新软件令人目不暇接。作为技术载体之一的图 书,只有迅速作出反应,把新软件介绍给读者,才能赢得他们的青睐。总之,兵贵神速, 这是我们的目标。

正应验了前人的预言,21 世纪是一个信息时代。软件作为信息系统的神经,在我们生活的这个时代里发挥着举足轻重的作用,而微软公司和它推出的各种软件,更是令世人为之瞩目。我们将立足图书,继续并扩大与微软公司的合作,在中国信息产业的发展道路上留下自己的足迹。

出版者 2000年 10 月

# **About This Book**

Welcome to the MCSE Training Kit—Designing a Microsoft Windows 2000 Directory Services Infrastructure. This kit prepares you to analyze an organization's business and technical requirements and design a Windows 2000 directory services infrastructure.

You will learn and practice the four-stage Active Directory infrastructure design process, which includes creating a forest plan, a domain plan, an organizational unit (OU) plan, and a site topology plan. You will also learn how to create an Active Directory implementation plan, which includes planning a migration from Windows NT 4 directory services to Active Directory and planning directory service synchronization with Active Directory.

This course supports the Microsoft Certified Systems Engineer program.

Note For more information on becoming a Microsoft Certified Systems Engineer, see the section titled "The Microsoft Certified Professional Program" later in this chapter.

Each chapter in this book is divided into lessons, activities, labs, and reviews. Lessons include discussions of the key design objectives and then provide evaluations of possible decisions to be made within each design objective, and each lesson ends with a lesson summary. The activities and labs are designed to allow you to practice or demonstrate your understanding of the design objectives discussed within a chapter. Each chapter ends with a set of review questions to test your knowledge of the chapter material.

The "Getting Started" section of this introduction provides important setup instructions that describe the hardware and software requirements to use the evaluation software included in this kit.

# **Intended Audience**

The target reader for this book is the information technology (IT) professional involved in network design (network architect, senior support professional, or consultant) who has a minimum of one year of experience implementing, administering, and configuring network operating systems, including Novell NetWare, UNIX, or Macintosh networks. The network designer has gained his or her experience in environments that have the following characteristics:

- The number of supported users ranges from 200 to more than 25,000.
- The number of physical locations ranges from 5 to more than 150.
- Typical network services and applications include file and print, database, messaging, proxy server or firewall, dial-in server, desktop management, and Web hosting.
- Connectivity needs include connecting individual offices and users at remote locations to the corporate network and connecting corporate networks to the Internet.

This book was developed for information technology (IT) professionals who need to design, plan, implement, and support Microsoft Windows 2000 Active Directory or who plan to take the related Microsoft Certified Professional exam 70-219, Designing a Microsoft Windows 2000 Directory Services Infrastructure.

# **Prerequisites**

This course requires that students meet the following prerequisites:

- A working knowledge of current networking technology
- A minimum of one year of experience implementing, administering, and configuring network operating systems
- Successful completion of the Microsoft Windows 2000 MCSE Exam 70-217: Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure
- Successful completion of the following core exams for the Microsoft Windows 2000 MCSE track is recommended: Exam 70-210: Installing, Configuring, and Administering Microsoft Windows 2000 Professional; Exam 70-215: Installing, Configuring, and Administering Microsoft Windows 2000 Server; Exam 70-216: Implementing and Administering a Microsoft Windows 2000 Network Infrastructure

## **Reference Materials**

You might find the following reference materials useful:

- Microsoft Corporation. Microsoft Windows 2000 Server Resource Kit, Redmond, Washington: Microsoft Press, 2000.
- Microsoft Corporation. MCSE Training Kit—Microsoft Windows 2000 Active Directory Services. Redmond, Washington: Microsoft Press, 2000.
- Iseminger, David. Active Directory Services for Microsoft Windows 2000 Technical Reference. Redmond, Washington: Microsoft Press, 2000.
- Microsoft Corporation. Building Enterprise Active Directory Services, Notes from the Field. Redmond, Washington: Microsoft Press, 2000.
- Cone, Eric, Planning for Windows 2000. Indianapolis, Indiana: New Riders Publishing, 1999.
- Lowe-Norris, Alistair G. Windows 2000 Active Directory Services.
   Sebastopol, California: O'Reilly & Associates, 2000.
- Windows 2000 white papers and case studies, available online at http://www.microsoft.com/windows/server/

# **About the Supplemental Course Materials CD-ROM**

The Supplemental Course Materials compact disc contains a variety of informational aids that may be used throughout this book. The files on the CD include interviews with Microsoft Consulting Services consultants and program managers, Windows 2000 white papers, blank copies of worksheets used for analyzing an organization's business and technical environment, online seminars, and an online version of this book. These files can be used directly from the CD-ROM or copied onto your hard disk. For more information regarding the contents of this CD-ROM, see the section titled "Getting Started" later in this introduction.

The materials on the CD supplement some of the key concepts covered in the book. You should view these materials when suggested, and then use them as a review tool while you work through the training. An online version of this book is also included on the CD with a variety of viewing options available. For information about using the online book, see the section "The Online Book" later in this introduction. (The other CD-ROM contains an evaluation edition of Windows 2000 Advanced Server.)

# **Features of This Book**

Each chapter opens with a "Before You Begin" section, which prepares you for completing the chapter.

The chapters are then divided into lessons. Most of the chapters contain activities and labs that give you an opportunity to use and explore the design skills presented.

The "Review" section at the end of the chapter allows you to test what you have learned in the chapter's lessons.

Appendix A, "Questions and Answers," contains all of the book's questions and corresponding answers.

### **Notes**

Several types of Notes appear throughout the lessons.

- Notes marked Tip contain explanations of possible results or alternative methods.
- Notes marked Important contain information that is essential to completing a task.
- Notes marked Note contain supplemental information.
- Notes marked Caution contain warnings about possible loss of data.
- Notes marked More Info contain cross-references to other critical reference material.
- Notes marked Real World contain references to documentation from MCS consultants, program managers, or other subject matter experts.

## Conventions

The following conventions are used throughout this book.

#### **Notational Conventions**

- Characters or commands that you type appear in bold lowercase type.
- *Italic* in syntax statements indicates placeholders for variable information. *Italic* is also used for book titles.
- Names of files and folders appear in Title Caps, except when you are to type them directly. Unless otherwise indicated, you can use all lowercase letters when you type a filename in a dialog box or at a command prompt.
- Filename extensions appear in all lowercase.
- Acronyms appear in all uppercase.
- Monospace type represents code samples, examples of screen text, or entries that you might type at a command prompt or in initialization files.
- Square brackets [] are used in syntax statements to enclose optional items. For example, [filename] in command syntax indicates that you can choose to type a filename with the command. Type only the information within the brackets, not the brackets themselves.
- Braces { } are used in syntax statements to enclose required items. Type only the information within the braces, not the braces themselves.
- Icons represent specific sections in the book as follows:

#### Icon

### Represents



Supplemental course material. This material includes interviews with Microsoft Consulting Services consultants and program managers, Windows 2000 white papers, blank copies of worksheets used for analyzing an organization's business and technical environment, and online seminars. You will find these files on the book's Supplemental Course Materials CD-ROM.



An activity or lab. You should perform the activity or lab to give yourself an opportunity to use the design skills presented in the lesson.



Chapter review questions. These questions at the end of each chapter allow you to test what you have learned in the lessons. You will find the answers to the review questions in Appendix A, "Questions and Answers."

#### **Fictitious Name Conventions**

The content of this training kit requires the use of fictitious company and domain names in fictitious scenarios. Every effort has been made to avoid using domain names that represent live Web sites. To accomplish this, domain names for fictitious companies are represented by the first letter of the company name appended by "-100times." For example, for the fictitious company Parnell Aerospace, the main domain name will be "p-100times.com." In reality, domain names should indicate an organization's identity.

# **Chapter and Appendix Overview**

This self-paced training course combines notes, hands-on activities and labs, professional interviews and worksheets, and review questions to teach you how to design a Windows 2000 directory services infrastructure. It is designed to be completed from beginning to end, but you can choose a customized track and complete only the sections that interest you. (See the next section, "Finding the Best Starting Point for You," for more information.) If you choose the customized track option, see the "Before You Begin" section in each chapter. Complete any preliminary work required before you begin the chapter.

The book is divided into the following chapters:

- The "About This Book" section contains a self-paced training overview and introduces the components of the training. Read this section thoroughly to get the greatest educational value from this self-paced training and to plan which lessons you will complete.
- Chapter 1, "Introduction to Active Directory," introduces you to Active Directory components, including objects, schema, domains, organizational units (OUs), trees, forests, sites, domain controllers, and the global catalog. It also introduces you to Active Directory concepts, including replication, trust relationships, group policy, DNS namespaces, and naming conventions.
- Chapter 2, "Introduction to Designing a Directory Services Infrastructure," introduces you to the tasks you need to complete before attempting to design your Active Directory infrastructure. These tasks include assembling a design team, conducting an analysis of your business environment, conducting an analysis of your technical environment, and setting up a test environment. This chapter also introduces the Active Directory infrastructure design

- process, which consists of creating a forest plan, creating a domain plan, creating an organizational unit (OU) plan, and creating a site topology plan.
- Chapter 3, "Creating a Forest Plan," covers how to create a forest plan, which includes designing a forest model and designing a schema modification plan. You learn how to assess an organization's forest needs and determine the number of forests it requires. You also learn how to create a schema modification policy, assess an organization's schema needs, and determine whether to modify the schema.
- Chapter 4, "Creating a Domain Plan," shows you how to create a domain plan by defining domains, defining the forest root domain, defining a domain hierarchy, naming domains, and planning DNS server deployment.
- Chapter 5, "Creating an Organizational Unit Plan," describes how to create an OU plan by defining an OU structure and then planning user accounts and groups.
- Chapter 6, "Creating a Site Topology Plan," shows you how to create a site topology plan by defining sites, placing domain controllers, defining a replication strategy, and placing global catalog servers and operations masters within a forest.
- Chapter 7, "Creating an Active Directory Implementation Plan," discusses the directory service migration and synchronization issues involved in moving from an organization's current directory service to Active Directory.
- Appendix A, "Questions and Answers," lists all of the review questions from the book showing the page number where the question appears and the suggested answer.
- Appendix B, "Base Schema Class Objects," contains a list of the basic set of schema class objects shipped with Windows 2000 Server, which can be used to determine whether you need to change the base schema and whom the changes will impact.
- Appendix C, "Base Schema Attribute Objects," contains a list of the basic set of schema attribute objects shipped with Windows 2000 Server, which can be used to determine whether you need to change the base schema and whom the changes will impact.
- The Glossary lists and defines the terms associated with your study of Windows 2000 directory services infrastructure design.

# Finding the Best Starting Point for You

Because this book is self-paced, you can skip some lessons and revisit them later. Use the following table to find the best starting point for you:

If you	Follow this learning path	
Are preparing to take the Microsoft Certified Professional exam 70-219, Designing a Microsoft Windows 2000 Directory Services Infrastructure	Read the "Getting Started" section. Then work through Chapters 1 through 7, in order.	
Want to review information about specific topics from the exam	Use the "Where to Find Specific Skills in This Book" section that follows this table.	

### Where to Find Specific Skills in This Book

The following tables provide a list of the skills measured on certification exam 70-219, Designing a Microsoft Windows 2000 Directory Services Infrastructure. The tables provide the skill and where in this book you will find the lesson relating to that skill.

Note Exam skills are subject to change without prior notice and at the sole discretion of Microsoft.

Analyzing Business Requirements	
Skill being measured	Location in book
Analyze the existing and planned business models	
Analyze the company model and geographical scope	Chapter 2, Lesson 2
Analyze company processes	Chapter 2, Lesson 2
Analyze the existing and planned organizational structures	
Analyze the management model	Chapter 2, Lesson 2
Analyze the company organization	Chapter 2, Lesson 2
Analyze the vendor, partner, and customer	
relationships	Chapter 2, Lesson 2
Analyze the acquisition plans	Chapter 2, Lesson 2

Skill being measured	Location in book
Analyze the factors that influence company strategies	
Identify company priorities	Chapter 2, Lesson 2
Identify the projected growth and growth strategy	Chapter 2, Lesson 2
Identify relevant laws and regulations	Chapter 2, Lesson 2
Identify the company's tolerance for risk	Chapter 2, Lesson 2
Identify the total cost of operations	Chapter 2, Lesson 2
Analyze the structure of IT management	
Analyze the type of administration, such as centralized or decentralized	Chapter 2, Lesson 2
Analyze the funding model	Chapter 2, Lesson 2
Analyze the use of outsourcing	Chapter 2, Lesson 2
Analyze the decision-making process	Chapter 2, Lesson 2
Analyze the change management process	Chapter 2, Lesson 2
Analyzing Technical Requirements	
Skill being measured	Location in book
Evaluate the company's existing and planned technical environment	
Analyze company size and user and resource distribution	Chapter 2, Lesson 3
Assess the available connectivity between geographically remote sites	Chapter 2, Lesson 3
Assess the net available bandwidth	Chapter 2, Lesson 3
Analyze performance requirements	Chapter 2, Lesson 3
Analyze data and system access patterns	Chapter 2, Lesson 3
Analyze network roles and responsibilities	Chapter 2, Lesson 3
Analyze security considerations	Chapter 2, Lesson 3

continued

Analyze the impact of Active Directory on the existing and planned technical environment	
Assess existing systems and applications	Chapter 2, Lesson 3
Identify existing and planned upgrades and rollouts	Chapter 2, Lesson 3
Analyze technical support structure	Chapter 2, Lesson 3
Analyze existing and planned network and systems management	Chapter 2, Lesson 3
Analyze the business requirements for client computer desktop management	
Analyze end-user work needs	Chapter 2, Lesson 3
Identify technical support needs for end-users	Chapter 2, Lesson 3
Establish the required client computer environment	Chapter 2, Lesson 3
Designing a Directory Service Architecture Skill being measured	Location in book
Design an Active Directory forest and domain structure	
Design a forest and schema structure	Chapter 3, Lessons 1 and 2
Design a domain structure	Chapter 4, Lessons 1, 2, and 3
Analyze and optimize trust relationships	Chapter 4, Lesson 3
Design an Active Directory naming strategy	
Establish the scope of Active Directory	Chapter 4, Lesson 4
Design the namespace	Chapter 4, Lesson 4
Plan DNS strategy	Chapter 4, Lesson 5
Design and plan the structure of organizational units (OUs)	
Develop an OU delegation plan	Chapter 5, Lesson 1
Plan group policy object management	Chapter 5, Lesson 1
Plan policy management for client computers	Chapter 5, Lessons 1 and 2

Skill being measured	Location in book
Plan for the coexistence of Active Directory and other directory services	
Plan directory service synchronization with Active Directory	Chapter 7, Lesson 2
Design an Active Directory site topology	
Design a replication strategy	Chapter 6, Lesson 3
Define site boundaries	Chapter 6, Lesson 1
Design a schema modification policy	
Create a schema modification policy that outlines who has control of the schema and how modifications are administered.	Chapter 3, Lesson 2
Design an Active Directory implementation plan	
Create an implementation plan that considers the directory service migration and synchronization issues involved in moving from the current directory service to Active Directory.	Chapter 7, Lessons 1 and 2
Designing Service Locations	
Skill being measured	Location in book
Design the placement of operations masters	-
Place operations masters, taking into account performance, fault tolerance, functionality, and manageability	Chapter 6, Lesson 4
Design the placement of global catalog servers	
Place global catalog servers, taking into account performance, fault tolerance, functionality, and manageability	Chapter 6, Lesson 4
Design the placement of domain controllers	
Place domain controllers, taking into account performance, fault tolerance, functionality, and manageability	Chapter 6, Lesson 2

continued

Skill being measured	Location in book	
Design the placement of DNS servers		
Place DNS servers, taking into account performance, fault tolerance, functionality, and manageability	Chapter 4, Lesson 5	
Plan for the interoperability with the existing DNS	Chapter 4, Lesson 5	

# **Getting Started**

This self-paced training course contains activities and labs to help you learn how to design a Windows 2000 directory services infrastructure. To complete all of the activities and labs, you must have one computer running Windows 2000 Advanced Server.

It is recommended that you set up the server on its own network specifically for this self-paced training because, in the event of an inadvertent change to the server, you can avoid the possibility of undesirable results if you are connected to a larger network.

## **Hardware Requirements**

To successfully run the evaluation edition of Windows 2000 Advanced Server, all hardware should be on the Microsoft Windows 2000 Hardware Compatibility List (HCL). The latest version of the HCL can be downloaded from the Hardware Compatibility List Web page at <a href="http://www.microsoft.com/hwtest/hcl/">http://www.microsoft.com/hwtest/hcl/</a>. Each computer must have the following minimum configuration:

- 32-bit 166MHz Pentium processor
- 64-MB memory for networking with one to five client computers; 128 MB minimum is recommended for most network environments
- 2 GB free hard disk space
- 12X or faster CD-ROM drive
- SVGA monitor capable of 800 x 600 resolution (1024 x 768 recommended)
- High-density 3.5-inch disk drive, unless your CD-ROM is bootable and supports starting the Setup program from a CD-ROM
- Microsoft Mouse or compatible pointing device

### **Software Requirements**

A copy of the 120-day Evaluation Edition of Windows 2000 Advanced Server is required to complete all of the activities and labs in this course.

Caution The 120-day Evaluation Edition of Windows 2000 Advanced Server provided with this training is not the full retail product and is provided only for training purposes. Microsoft Technical Support does not support evaluation editions. For additional support information regarding this book and the CD-ROMs (including answers to commonly asked questions about installation and use), visit the Microsoft Press Technical Support Web site at <a href="http://mspress.microsoft.com/support/">http://mspress.microsoft.com/support/</a>. You can also email TKINPUT@MICROSOFT.COM, or send a letter to Microsoft Press, Attn: Microsoft Press Technical Support, One Microsoft Way, Redmond, WA 98502-6399.

### **Setup Instructions**

The following information is a checklist of the tasks that you need to perform to prepare your computer for the lessons in this book. If you do not have experience installing Windows 2000 or another network operating system, you may need help from an experienced network administrator. As you complete a task, mark it off in the check box. Step-by-step instructions for each task follow.

□ Create Windows 2000 Advanced Server Setup diskettes.

Run the Windows 2000 Advanced Server Pre-Copy and Text Mode Setup Routine.
Run the GUI mode and gathering information phase of Windows 2000 Advanced Server Setup.
Complete the Installing Windows Networking Components phase of Windows 2000 Advanced Server Setup.
Complete the hardware installation phase of Windows 2000 Advanced Server Setup.

**Note** The installation information provided will help you prepare a computer for use with this book. It is not intended to teach you installation.

### **Installing Windows 2000 Advanced Server**

To complete the exercises in this course, you should install Windows 2000 Advanced Server on a computer with no formatted partitions. During installation, you can use the Windows 2000 Advanced Server Setup program to create a partition on your hard disk, on which you install Windows 2000 Advanced Server as a stand-alone server in a workgroup.

### ► To create Windows 2000 Advanced Server Setup Diskettes

Complete this procedure on a computer running MS-DOS or any version of Windows with access to the Bootdisk directory on the Windows 2000 Advanced Server installation CD-ROM. If your computer is configured with a bootable CD-ROM drive, you can install Windows 2000 without using the Setup disks. To complete this procedure as outlined, bootable CD-ROM support must be disabled in the BIOS.

**Important** This procedure requires four formatted 1.44-MB disks. If you use diskettes that contain data, the data will be overwritten without warning.

- 1. Label the four blank, formatted 1.44-MB diskettes as follows:
  - Windows 2000 Advanced Server Setup Disk #1
  - Windows 2000 Advanced Server Setup Disk #2
  - Windows 2000 Advanced Server Setup Disk #3
  - Windows 2000 Advanced Server Setup Disk #4
- 2. Insert the Microsoft Windows 2000 Advanced Server CD-ROM into the CD-ROM drive.
- 3. If a Windows 2000 CD-ROM dialog box appears to prompt you to install or upgrade to Windows 2000, click No.
- 4. Open a command prompt.
- 5. At the command prompt, change to your CD-ROM drive. For example, if your CD-ROM drive name is E, type e: and press Enter.
- 6. At the command prompt, change to the Bootdisk directory by typing cd bootdisk and pressing Enter.