

Joe Casad

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# MCSE

TRAINING GUIDE

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networking  
essentials

# MCSE Training Guide: Networking Essentials

By Joe Casad and Dan Newland, MCSE, MCT

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## Dedications

*From Dan Newland*

To my parents, who instilled in me a desire to understand and allowed me the opportunity to learn.

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# Introduction

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*MCSE Training Guide: Networking Essentials* is designed for advanced end-users, service technicians, and network administrators who are considering certification as a Microsoft Certified System Engineer (MCSE). The Networking Essentials exam (“Exam 70-58: Networking Essentials”) tests your ability to implement, administer, and troubleshoot systems, as well as your ability to provide technical support to users of the Microsoft suite of networking products.

## Who Should Read This Book

This book is designed to help advanced users, service technicians, and network administrators who are working for MCSE certification prepare for the MCSE “Networking Essentials” exam (#70-58).

This book is your one-stop shop. Everything you need to know to pass the exam is in here, and the book has been certified by Microsoft as study material. You do not *need* to take a class in addition to buying this book to pass the exam. However, your personal study habits may benefit from taking a class in addition to the book, or buying this book in addition to a class.

This book also can help advanced users and administrators who are not studying for the MCSE exam but are looking for a single-volume reference on Networking Essentials.

## How This Book Helps You

This book takes you on a self-guided tour of all the areas covered by the MCSE Networking Essentials exam and teaches you the specific skills you need to achieve your MCSE certification. You'll also find helpful hints, tips, real-world examples, exercises, and references to additional study materials. Specifically, this book is set up to help you in the following ways:



- ▶ **Organization.** This book is organized by major exam topics (4 in all) and exam objectives. Every objective you need to know for the “Networking Essentials” exam is covered in this book; we’ve included a margin icon, like the one in the margin here, to help you quickly locate these objectives. Pointers at different elements direct you to the appropriate place in the book if you find you need to review certain sections.
- ▶ **Decide how to spend your time wisely.** Pre-chapter quizzes at the beginning of each chapter test your knowledge of the objectives contained within that chapter. You can find the answers to each pre-chapter quiz at the end of the chapter. If you already know the answers to those questions, you can make a time management decision accordingly.
- ▶ **Extensive practice test options.** Plenty of questions at the end of each chapter test your comprehension of material covered within that chapter. An answer list follows the questions so you can check yourself. These practice test options will help you decide what you already understand and what requires extra review on your part. You’ll also get a chance to practice for the certification exams using the test engine on the accompanying CD-ROM. The questions on the CD-ROM provide a more thorough and comprehensive look at what the certification exams really are like.



For a complete description of New Riders's newly developed test engine, please see Appendix D, “All About TestPrep.”

For a complete description of what you can find on the CD-ROM, see Appendix C, “What’s on the CD-ROM.”



On the CD-ROM accompanying this book, you'll find TestPrep and Flash.

This book also can help you by serving as a desktop reference for information on the basics of networking technology.

## **Understanding What the “Networking Essentials” Exam (#70-58) Covers**

The “Networking Essentials” exam (#70-58) covers four main topic areas, arranged in accordance with 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 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

## Planning

- ▶ Select the appropriate media for various situations. Media choices include:
  - ▶ Twisted-pair cable
  - ▶ Coaxial cable
  - ▶ Fiber-optic cable
  - ▶ Wireless
- ▶ Situational elements include:
  - ▶ Cost
  - ▶ Distance limitations
  - ▶ Number of nodes
- ▶ Select the appropriate topology for various Token Ring and Ethernet networks
- ▶ Select the appropriate network and transport protocol or protocols for various Token Ring and Ethernet networks. Protocol choices are:
  - ▶ DLC
  - ▶ AppleTalk
  - ▶ IPX
  - ▶ TCP/IP
  - ▶ NFS
  - ▶ SMB
- ▶ Select the appropriate connectivity devices for various Token Ring and Ethernet networks. Connectivity devices include:
  - ▶ Repeaters
  - ▶ Bridges

- ▶ Routers
- ▶ Brouters
- ▶ Gateways
- ▶ List the characteristics, requirements, and appropriate situations for WAN connection services. WAN connection services include:
  - ▶ X.25
  - ▶ ISDN
  - ▶ Frame Relay
  - ▶ ATM

## Implementation

- ▶ Choose an administrative plan to meet specified needs, including performance management, account management, and security
- ▶ Choose a disaster recovery plan for various situations
- ▶ Given the manufacturer's documentation for the network adapter, install, configure, and resolve hardware conflicts for multiple network adapters in a Token Ring or Ethernet network
- ▶ Implement a NetBIOS naming scheme for all computers on a given network
- ▶ Select the appropriate hardware and software tools to monitor trends in the network

## Troubleshooting

- ▶ Identify common errors associated with components required for communications
- ▶ Diagnose and resolve common connectivity problems with cards, cables, and related hardware

- ▶ Resolve broadcast storms
- ▶ Identify and resolve network performance problems

## Hardware and Software Needed

As a self-paced study guide, much of the book expects you to use Microsoft products and follow along through the exercises while you learn.

## Tips for the Exam

Remember the following tips as you prepare for the MCSE certification exams:

- ▶ **Read all the material.** Microsoft has been known to include material not specified in the objectives. This book includes additional information not required by the objectives in an effort to give you the best possible preparation for the examination and for the real-world network experiences to come.
- ▶ **Complete the exercises in each chapter.** The exercises will help you gain experience using the Microsoft product. All Microsoft exams are experience-based and require you to have used the Microsoft product in a real networking environment. Exercises for each objective are placed at the end of each chapter.
- ▶ **Take each pre-chapter quiz to evaluate how well you know the topic of the chapter.** Each chapter opens with questions related to the exam objectives covered in the chapter. You can find the answers to the quiz at the end of the chapter.
- ▶ **Complete all the questions in the “Review Questions” sections.** Complete the questions at the end of each chapter—they will help you remember key points. The questions are fairly simple, but be warned, some questions may have more than one answer.



Although this book is designed to prepare you to take and pass the “Networking Essentials” certification exam, there are no guarantees. Read this book, work through the exercises, and take the practice assessment exams.

When taking the real certification exam, make sure you answer all the questions before your time limit expires. Do not spend too much time on any one question. If you are unsure about an answer, answer the question as best you can and mark it for later review when you have finished all the questions. It has been said, whether correctly or not, that any questions left unanswered will automatically cause you to fail.

Remember, the objective is not to pass the exam, it is to understand the material. After you understand the material, passing is simple. Knowledge is a pyramid; to build upward, you need a solid foundation. The Microsoft Certified System Engineer program is designed to ensure that you have that solid foundation.

Good luck!

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