

Days: 5

Description: Trust the best-selling Official Cert Guide series from Cisco Press to help you learn, prepare, and practice for exam success. They are built with the objective of providing assessment, review, and practice to help ensure you are fully prepared for your certification exam. This book, combined with the CCNA 200-301 Official Cert Guide Volume 2, cover all of exam topics on the CCNA 200-301 exam.

CCNA 200-301 Official Cert Guide, Volume 1 presents you with an organized test-preparation routine using proven series elements and techniques. “Do I Know This Already?” quizzes open each chapter and enable you to decide how much time you need to spend on each section. Exam topic lists make referencing easy. Chapter-ending Exam Preparation Tasks help you drill on key concepts you must know thoroughly.

- Master Cisco CCNA 200-301 exam topics
- Assess your knowledge with chapter-opening quizzes
- Review key concepts with exam preparation tasks
- Practice with realistic exam questions in the practice test software

CCNA 200-301 Official Cert Guide, Volume 1 from Cisco Press enables you to succeed on the exam the first time and is the only self-study resource approved by Cisco. Best-selling author and expert instructor Wendell Odom shares preparation hints and test-taking tips, helping you identify areas of weakness and improve both your conceptual knowledge and hands-on skills.

OUTLINE:

INTRODUCTION

YOUR STUDY PLAN

PART I INTRODUCTION TO NETWORKING

CHAPTER 1 INTRODUCTION TO TCP/IP NETWORKING

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

PERSPECTIVES ON NETWORKING

TCP/IP NETWORKING MODEL

- History Leading to TCP/IP
- Overview of the TCP/IP Networking Model
- TCP/IP Application Layer
- TCP/IP Transport Layer
- TCP/IP Network Layer
- TCP/IP Data-Link and Physical Layers

DATA ENCAPSULATION TERMINOLOGY

- Names of TCP/IP Messages
- OSI Networking Model and Terminology

CHAPTER REVIEW

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CHAPTER 2 FUNDAMENTALS OF ETHERNET LANS

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

AN OVERVIEW OF LANS

- Typical SOHO LANS
- Typical Enterprise LANS
- The Variety of Ethernet Physical Layer Standards
- Consistent Behavior over All Links Using the Ethernet Data-Link Layer

BUILDING PHYSICAL ETHERNET LANS WITH UTP

- Transmitting Data Using Twisted Pairs
- Breaking Down a UTP Ethernet Link
- UTP Cabling Pinouts for 10BASE-T and 100BASE-T
- UTP Cabling Pinouts for 1000BASE-T

BUILDING PHYSICAL ETHERNET LANS WITH FIBER

- Fiber Cabling Transmission Concepts
- Using Fiber with Ethernet

SENDING DATA IN ETHERNET NETWORKS

- Ethernet Data-Link Protocols
- Sending Ethernet Frames with Switches and Hubs

CHAPTER REVIEW

CHAPTER 3 FUNDAMENTALS OF WANS AND IP ROUTING

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

WIDE-AREA NETWORKS

- Leased-Line WANS
- Ethernet as a WAN Technology

IP ROUTING

- Network Layer Routing (Forwarding) Logic
- How Network Layer Routing Uses LANS and WANS
- How IP Addressing Helps IP Routing
- How IP Routing Protocols Help IP Routing

OTHER NETWORK LAYER FEATURES

- Using Names and the Domain Name System
- The Address Resolution Protocol
- ICMP Echo and the ping Command

CHAPTER REVIEW

PART I REVIEW

PART II IMPLEMENTING ETHERNET LANS

CHAPTER 4 USING THE COMMAND-LINE INTERFACE

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

ACCESSING THE CISCO CATALYST SWITCH CLI

- Cisco Catalyst Switches
- Accessing the Cisco IOS CLI
- CLI Help Features
- The debug and show Commands

CONFIGURING CISCO IOS SOFTWARE

- Configuration Submodes and Contexts
- Storing Switch Configuration Files
- Copying and Erasing Configuration Files

CHAPTER REVIEW

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CHAPTER 5 ANALYZING ETHERNET LAN SWITCHING

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

LAN SWITCHING CONCEPTS

- Overview of Switching Logic
- Forwarding Known Unicast Frames
- Learning MAC Addresses
- Flooding Unknown Unicast and Broadcast Frames
- Avoiding Loops Using Spanning Tree Protocol
- LAN Switching Summary

VERIFYING AND ANALYZING ETHERNET SWITCHING

- Demonstrating MAC Learning
- Switch Interfaces
- Finding Entries in the MAC Address Table
- Managing the MAC Address Table (Aging, Clearing)
- MAC Address Tables with Multiple Switches

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CHAPTER 6 CONFIGURING BASIC SWITCH MANAGEMENT

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

SECURING THE SWITCH CLI

- Securing User Mode and Privileged Mode with Simple Passwords
- Securing User Mode Access with Local Usernames and Passwords
- Securing User Mode Access with External Authentication Servers
- Securing Remote Access with Secure Shell

ENABLING IPV4 FOR REMOTE ACCESS

- Host and Switch IP Settings
- Configuring IPv4 on a Switch
- Configuring a Switch to Learn Its IP Address with DHCP
- Verifying IPv4 on a Switch

MISCELLANEOUS SETTINGS USEFUL IN THE LAB

- History Buffer Commands
- The logging synchronous, exec-timeout, and no ip domain-lookup Commands

CHAPTER REVIEW

CHAPTER 7 CONFIGURING AND VERIFYING SWITCH INTERFACES

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

CONFIGURING SWITCH INTERFACES

- Configuring Speed, Duplex, and Description
- Configuring Multiple Interfaces with the interface range Command
- Administratively Controlling Interface State with shutdown
- Removing Configuration with the no Command
- Autonegotiation

ANALYZING SWITCH INTERFACE STATUS AND STATISTICS

- Interface Status Codes and Reasons for Nonworking States
- Interface Speed and Duplex Issues
- Common Layer 1 Problems on Working Interfaces

CHAPTER REVIEW

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PART III IMPLEMENTING VLANS AND STP

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CHAPTER 8 IMPLEMENTING ETHERNET VIRTUAL LANS

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

VIRTUAL LAN CONCEPTS

- Creating Multiswitch VLANs Using Trunking
- Forwarding Data Between VLANs

VLAN AND VLAN TRUNKING CONFIGURATION AND VERIFICATION

- Creating VLANs and Assigning Access VLANs to an Interface
- VLAN Trunking Protocol
- VLAN Trunking Configuration
- Implementing Interfaces Connected to Phones

TROUBLESHOOTING VLANS AND VLAN TRUNKS

- Access VLANs Undefined or Disabled
- Mismatched Trunking Operational States
- The Supported VLAN List on Trunks
- Mismatched Native VLAN on a Trunk

CHAPTER REVIEW

CHAPTER 9 SPANNING TREE PROTOCOL CONCEPTS

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

STP AND RSTP BASICS

- The Need for Spanning Tree
- What Spanning Tree Does
- How Spanning Tree Works
- Configuring to Influence the STP Topology

DETAILS SPECIFIC TO STP (AND NOT RSTP)

- STP Activity When the Network Remains Stable
- STP Timers That Manage STP Convergence
- Changing Interface States with STP

RAPID STP CONCEPTS

- Comparing STP and RSTP
- RSTP and the Alternate (Root) Port Role
- RSTP States and Processes
- RSTP and the Backup (Designated) Port Role
- RSTP Port Types
- Optional STP Features

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CHAPTER 10 RSTP AND ETHERCHANNEL CONFIGURATION

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

UNDERSTANDING RSTP THROUGH CONFIGURATION

- The Need for Multiple Spanning Trees
- STP Modes and Standards
- The Bridge ID and System ID Extension
- How Switches Use the Priority and System ID Extension
- RSTP Methods to Support Multiple Spanning Trees
- Other RSTP Configuration Options

CONFIGURING LAYER 2 ETHERCHANNEL

- Configuring a Manual Layer 2 EtherChannel
- Configuring Dynamic EtherChannels
- Physical Interface Configuration and EtherChannels
- EtherChannel Load Distribution

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PART III REVIEW

PART IV IPV4 ADDRESSING

CHAPTER 11 PERSPECTIVES ON IPV4 SUBNETTING

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

INTRODUCTION TO SUBNETTING

- Subnetting Defined Through a Simple Example
- Operational View Versus Design View of Subnetting

ANALYZE SUBNETTING AND ADDRESSING NEEDS

- Rules About Which Hosts Are in Which Subnet
- Determining the Number of Subnets
- Determining the Number of Hosts per Subnet
- One Size Subnet Fits All—Or Not

MAKE DESIGN CHOICES

- Choose a Classful Network
- Choose the Mask
- Build a List of All Subnets

PLAN THE IMPLEMENTATION

- Assigning Subnets to Different Locations
- Choose Static and Dynamic Ranges per Subnet

CHAPTER REVIEW

CHAPTER 12 ANALYZING CLASSFUL IPV4 NETWORKS

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

CLASSFUL NETWORK CONCEPTS

- IPv4 Network Classes and Related Facts
- Number of Hosts per Network
- Deriving the Network ID and Related Numbers
- Unusual Network IDs and Network Broadcast Addresses

PRACTICE WITH CLASSFUL NETWORKS

- Practice Deriving Key Facts Based on an IP Address
- Practice Remembering the Details of Address Classes

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CHAPTER 13 ANALYZING SUBNET MASKS

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

SUBNET MASK CONVERSION

- Three Mask Formats
- Converting Between Binary and Prefix Masks
- Converting Between Binary and DDN Masks
- Converting Between Prefix and DDN Masks
- Practice Converting Subnet Masks

IDENTIFYING SUBNET DESIGN CHOICES USING MASKS

- Masks Divide the Subnet's Addresses into Two Parts
- Masks and Class Divide Addresses into Three Parts
- Classless and Classful Addressing
- Calculations Based on the IPv4 Address Format
- Practice Analyzing Subnet Masks

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CHAPTER 14 ANALYZING EXISTING SUBNETS

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

DEFINING A SUBNET

- An Example with Network 172.16.0.0 and Four Subnets
- Subnet ID Concepts
- Subnet Broadcast Address
- Range of Usable Addresses

ANALYZING EXISTING SUBNETS: BINARY

- Finding the Subnet ID: Binary
- Finding the Subnet Broadcast Address: Binary
- Binary Practice Problems
- Shortcut for the Binary Process
- Brief Note About Boolean Math
- Finding the Range of Addresses

ANALYZING EXISTING SUBNETS: DECIMAL

- Analysis with Easy Masks
- Predictability in the Interesting Octet
- Finding the Subnet ID: Difficult Masks
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PRACTICE ANALYZING EXISTING SUBNETS

- A Choice: Memorize or Calculate

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PART V IPV4 ROUTING

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“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

INSTALLING CISCO ROUTERS

- Installing Enterprise Routers
- Installing SOHO Routers

ENABLING IPV4 SUPPORT ON CISCO ROUTER INTERFACES

- Accessing the Router CLI
- Router Interfaces
- Router Auxiliary Port

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CHAPTER 16 CONFIGURING IPV4 ADDRESSES AND STATIC ROUTES

“DO I KNOW THIS ALREADY?” QUIZ

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IP ROUTING

- IPv4 Routing Process Reference
- An Example of IP Routing

CONFIGURING IP ADDRESSES AND CONNECTED ROUTES

- Connected Routes and the ip address Command
- The ARP Table on a Cisco Router

CONFIGURING STATIC ROUTES

- Static Network Routes
- Static Host Routes
- Floating Static Routes
- Static Default Routes
- Troubleshooting Static Routes

IP FORWARDING WITH THE LONGEST PREFIX MATCH

- Using show ip route to Find the Best Route
- Using show ip route address to Find the Best Route
- Interpreting the IP Routing Table

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CHAPTER 17 IP ROUTING IN THE LAN

“DO I KNOW THIS ALREADY?” QUIZ

FOUNDATION TOPICS

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VLAN ROUTING WITH ROUTER 802.1Q TRUNKS

- Configuring ROAS
- Verifying ROAS
- Troubleshooting ROAS

VLAN ROUTING WITH LAYER 3 SWITCH SVIS

- Configuring Routing Using Switch SVIs
- Verifying Routing with SVIs
- Troubleshooting Routing with SVIs

VLAN ROUTING WITH LAYER 3 SWITCH ROUTED PORTS

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- Implementing Layer 3 EtherChannels
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“DO I KNOW THIS ALREADY?” QUIZ

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- Ping Command Basics
- Strategies and Results When Testing with the ping Command
- Using Ping with Names and with IP Addresses

PROBLEM ISOLATION USING THE TRACEROUTE COMMAND

- traceroute Basics

TELNET AND SSH

- Common Reasons to Use the IOS Telnet and SSH Client
- IOS Telnet and SSH Examples

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“DO I KNOW THIS ALREADY?” QUIZ

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- Routing Protocol Functions
- Interior and Exterior Routing Protocols
- Comparing IGP
- Administrative Distance

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- OSPF Overview
- Becoming OSPF Neighbors
- Exchanging the LSDB Between Neighbors
- Calculating the Best Routes with SPF

OSPF AREAS AND LSAS

- OSPF Areas
- How Areas Reduce SPF Calculation Time
- (OSPFv2) Link-State Advertisements

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“DO I KNOW THIS ALREADY?” QUIZ

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- OSPF Single-Area Configuration
- Wildcard Matching with the network Command
- Verifying OSPF Operation
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- Configuring the OSPF Router ID
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USING OSPFV2 INTERFACE SUBCOMMANDS

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“DO I KNOW THIS ALREADY?” QUIZ

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- The OSPF Broadcast Network Type
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OSPF NEIGHBOR RELATIONSHIPS

- OSPF Neighbor Requirements
- Issues That Prevent Neighbor Adjacencies
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“DO I KNOW THIS ALREADY?” QUIZ

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- The Historical Reasons for IPv6
- The IPv6 Protocols
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- IPv6 Routing Protocols

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- Representing Full (Unabbreviated) IPv6 Addresses
- Abbreviating and Expanding IPv6 Addresses
- Representing the Prefix Length of an Address
- Calculating the IPv6 Prefix (Subnet ID)
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“DO I KNOW THIS ALREADY?” QUIZ

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GLOBAL UNICAST ADDRESSING CONCEPTS

- Public and Private IPv6 Addresses
- The IPv6 Global Routing Prefix
- Address Ranges for Global Unicast Addresses
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- Subnetting with Unique Local IPv6 Addresses
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“DO I KNOW THIS ALREADY?” QUIZ

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IMPLEMENTING UNICAST IPV6 ADDRESSES ON ROUTERS

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SPECIAL ADDRESSES USED BY ROUTERS

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- IPv6 Multicast Addresses
- Miscellaneous IPv6 Addresses
- Anycast Addresses
- IPv6 Addressing Configuration Summary

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CHAPTER 25 IMPLEMENTING IPV6 ROUTING

“DO I KNOW THIS ALREADY?” QUIZ

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CONNECTED AND LOCAL IPV6 ROUTES

- Rules for Connected and Local Routes
- Example of Connected IPv6 Routes
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- Static Routes Using the Outgoing Interface
- Static Routes Using Next-Hop IPv6 Address
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“DO I KNOW THIS ALREADY?” QUIZ

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“DO I KNOW THIS ALREADY?” QUIZ

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“DO I KNOW THIS ALREADY?” QUIZ

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- Using WLC Ports
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- Step 1. Configure a RADIUS Server
- Step 2. Create a Dynamic Interface
- Step 3. Create a New WLAN
- Configuring WLAN Security
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- Configuring Advanced WLAN Settings
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