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Cisco Certified Entry Level Network Technician (CCENT)
Interconnecting Cisco Networking Devices (ICND1)

Format:	Self-Pace Online / eLearning
Program Duration:	6 Months
Course Contact Hours:	375

The Cisco CCENT ICND1 Program

This comprehensive program brings Cisco CCENT exam topics to life through the use of real-world demonstrations, animations, live instruction, and configurations, making learning these foundational networking topics easy and fun.

From the start, the content walks through the full range of topics on the CCENT ICND1 100-105 exam, including fundamentals of networking, LAN switching, IP routing, network services, and network management. This unique product contains multiple types of video presentations, including live instructor whiteboarding, real-world demonstrations, animations of network activity, dynamic KeyNote presentations, doodle videos, and hands-on router and switch CLI configuration and troubleshooting in real lab environments, enabling Learners to understand both the concepts and the hands-on application.

Further, this program explores essential information about the exam, such as what to do if you get stuck on a question, what to expect in the testing facility, and how to manage your time. Then the course dives into helping Learners preemptively learn about common misunderstandings people have about the exam and focuses on commonplace mistakes that people make. Finally, this content will take a deep dive into the types of questions to be encountered for each domain in the exam. In this section, Learners will have the opportunity to assess sample questions and see firsthand how the author solves each one while detailing why the right answer is correct and how to avoid pitfalls. This program is meant to help Learners prepare for the exam and identify areas of weakness, while improving your conceptual knowledge and hands-on skills.

Designed to take Learners inside CCNA networking concepts in a unique and interactive way, the CCENT ICND1 100-105 Course is guaranteed to help you master the foundational networking topics that will help you succeed on the exam and on the job.

Education and National Certifications

- Students should have or be pursuing a high school diploma or GED.
- National Certification

- Students who complete this program can sit for the **Cisco CCENT ICND1 101-105 Exam**. This exam tests a candidate's knowledge and skills related to network fundamentals, LAN switching technologies, routing technologies, infrastructure services, and infrastructure maintenance.

Program Objectives

At the conclusion of this program, students will be able to:

- Network reference models, protocols, and infrastructure components
- Network architectures
- Network cabling
- IPv4 and IPv6 addressing
- Cisco Catalyst Switch configuration
- Virtual LANs (VLANs) and trunking
- Basic switch security
- Voice VLANs
- Basic router operation, configuration, and verification
- Routing fundamentals
- RIP routing protocol
- Point-to-Point Protocol (PPP) and BGP
- Options for WAN connectivity and WAN topologies
- DHCP, NAT, NTP
- Switch security and ACLs
- Network management protocols and device management
- Troubleshooting with Cisco IOS tools
- Exam preparation strategies
- Implement strategies to tackle the most challenging topics on the exam
- Avoid traps and pitfalls to avoid on the exam
- Utilize strategies for approaching each question type on the exam
- Employ exam-day strategies to help you prepare for and succeed on the exam

Cisco CCENT ICND1 Program Detailed Student Objectives

FUNDAMENTALS OF NETWORKING

NETWORK REFERENCE MODELS AND PROTOCOLS

- The OSI Model
- The DoD Model
- IP, ICMP, UDP, and TCP
- Domain Name System (DNS)
- Ports and Protocols
- Protocol Data Units (PDUs)

INFRASTRUCTURE COMPONENTS

- Common Network Infrastructure Devices

- Firewalls
- Wireless Access Points and Controllers

PREPARING FOR YOUR ICND1 100-105 EXAM EVENT

- Star Topology
- Mesh Topology
- Collapsed Core vs. Three-Tier Architectures

NETWORK CABLING

- Copper Cables
- Fiber Cables
- Copper Connectors
- Fiber Connectors
- EIA/TIA 568 Standards

BASIC TROUBLESHOOTING

- Troubleshooting Fundamentals
- Cisco's Structured Troubleshooting Model

IPv4 ADDRESSING

- Binary Numbering
- IPv4 Address Formatting
- Address Clases
- Private vs. Public IPv4 Addresses
- Unicast
- Broadcast
- IPv4 Multicast
- The Need for Subnetting
- Calculating Available Subnets
- Calculating Available Hosts
- Calculating Usable Ranges of IPv4 Addresses
- Classless Inter-Domain Routing (CIDR)

IPv6ADDRESSING

- IPv6 Address Format
- Shortening an IPv6 Address
- Global Unicast
- IPv6 Multicast
- Link Local
- Unique Local
- Loopback
- Unspecified
- Solicited-Node Multicast
- Modified EUI-64
- Autoconfiguration
- IPv6 Traffic Flows

LAN SWITCHING

FUNDAMENTALS OF ETHERNET

- Ethernet Standards
- Structure of an Ethernet Frame
- Collision Domains
- Broadcast Domains
- MAC Addresses
- Traffic Flow Through a Switched Network

BASIC CISCO CATALYST SWITCH CONFIGURATION

- Port Addressing
- Connecting via the Console
- Configuring a Management IP Address
- Configuring a Default Gateway
- Setting Console and VTY Passwords
- Checking for Connectivity with Ping
- Enabling Telnet Access
- Enabling SSH Access
- Viewing Version Information
- Viewing Current Configuration
- MAC Address Table Examination
- Setting a Hostname
- Setting the Enable Password
- Setting the Exec Timeout
- Encrypting Passwords
- Creating a Banner
- Specifying Port Speed and Duplex
- Saving the Configuration

VIRTUAL LANS (VLANS)

- VLAN Theory
- VLAN Creation
- Assigning Ports to a VLAN

TRUNKING

- Trunking Theory
- Trunking Modes
- Creating Trunks
- VLAN Pruning

TROUBLESHOOTING SWITCH OPERATION

- Isolating the Issue
- Checking Interface Status
- Checking for Interface Errors
- Checking a Port's VLAN Membership
- Checking a Trunk's Status

BASIC SWITCH SECURITY

- Physical Security
- Switch Port Security
- Shutting Down Unused Ports
- Putting Unused Ports in an Unused VLAN

VOICE VLANS

- Voice VLAN Theory
- Voice VLAN Configuration

IP ROUTING

BASIC ROUTER OPERATION

- Packet Flow Through a Routed Network
- Sources of Route Information
- IP Routing Table
- Packet Forwarding

BASIC ROUTER CONFIGURATION AND VERIFICATION

- Router LEDs
- Interface Addressing
- Console vs. VTY Lines
- Checking for Connectivity with Ping
- Connecting Insecurely with Telnet
- Connecting Securely with SSH
- Checking the Cisco IOS Version
- Viewing the Current Router Configuration
- Viewing Interface Status
- Setting a Hostname
- Setting the Enable Password
- Setting the Exec Timeout
- Encrypting Passwords
- Assigning an IPv4 Address to an Interface
- Assigning an IPv6 Address to an Interface
- Basic Router Setup

ROUTING FUNDAMENTALS

- Configuring Static Routes for IPv4
- Configuring Static Routes for IPv6
- Overview of Routing Protocols
- Administrative Distance
- Split Horizon
- Metric

- Next Hop Address
- Passive Interfaces

ROUTING INFORMATION PROTOCOL (RIP)

- RIP Overview
- RIPv2 Configuration

NETWORK MANAGEMENT

NETWORK MANAGEMENT PROTOCOLS

- Cisco Discovery Protocol (CDP)
- Link Layer Discovery Protocol (LLDP)
- Using CDP or LLDP to Map a Network

DEVICE MANAGEMENT

- Understanding a Router's Boot Sequence
- Differentiating Between Boot Options
- Working with Cisco IOS Files
- Cisco IOS Images
- Cisco IOS Licenses
- Password Recovery

TROUBLESHOOTING WITH CISCO IOS TOOLS

- Checking Connectivity with Ping
- Tracing a Route
- Using the Terminal Monitor Feature
- Troubleshooting Case Study

THE CCENT CERTIFICATION AND THE ICND1 100-105 EXAM

CCENT AND CCNA R&S CERTIFICATION

- Understand the Options to Achieve the CCENT and CCNA R&S Certification

CISCO EXAM QUESTIONS

- Understand and prapre for Cisco Exam Questions

CCENT AND CCNA R&S CERTIFICATION

- Understand the Options to Achieve the CCENT and CCNA R&S Certification

ICND1 100-105 EXAM

- Understand aspects about the Exam
- Understand the Exam scoring system including weighting and partial credit opportunities
- Define the question counts
- Implement Exam Day Suggestions

MANAGING TIME PRESSURE ON THE EXAM

- Monitor the Question Counter and Timer
- Recognize special question types
- Implement Time Management Strategies

HOW TO USE THIS RESOURCE

- Understand How to Best Use This Exam Prep

COMMON MISTAKES AND MISUNDERSTANDINGS

NETWORK FUNDAMENTALS

- Choose UTP Cabling Pinouts
- Use Correct IPv4 Terminology
- Calculate IPv6 Addresses with EUI-64
- Abbreviate and Expand IPv6 Addresses
- Design Ethernet Campus LANs

LAN SWITCHING FUNDAMENTALS

- Predict Broadcast Domains
- Choose the Correct VLAN for Frame Forwarding
- Analyze Independent Switch Forwarding
- Predict Ethernet Speed and Duplex Mismatches

ROUTING FUNDAMETNALS

- Apply ARP in Enterprise IP Networks
- Compare IPv4 and IPv6 Static Route Configuration
- Configure IPv6 Static Routes with Link-Local Next-Hop Addresses
- Interpret IPv4 Subnet Designs Based on Masks
- Configure Routers for VLAN Trunking (Router-on-a-Stick)
- Predict Packet Encapsulations Used by IP Routing

INFRASTRUCTURE SERVICES

- Understand IP Addresses Used by DHCP Relay
- Configure NAT/PAT with an Interface Address
- Configure an IOS DHCP Server
- Match IPv4 Subnets with an ACL

INFRASTRUCTURE MAINTENANCE

- Troubleshoot with Extended Ping
- View Log Messages
- Restore the Configuration

EXAM WALKTHROUGH WITH SAMPLE QUESTIONS

NETWORK FUNDAMENTALS

- Analyze IPv6 Addresses
- Choose Cable Types
- Identify Resident Subnets
- Assign IPv4 Addresses
- Analyze IPv4 Subnet Masks
- Identify Usable IPv4 Addresses
- Identify IPv6 Addresses Used by Routers
- Analyze Existing Subnets
- Verify IPv6 Addresses on Router Interfaces
- Analyze Wireless LAN Basics
- Predict IPv6 Addresses That Use EUI-64
- Find an IPv4 Resident Subnet

LAN SWITCHING FUNDAMENTALS

- Analyze Switch Forwarding
- Use Data Plane Terms
- Identify Ethernet Domains
- Refresh MAC Addresses
- Configure Access VLANs
- Verify VLAN Trunks
- Troubleshoot Port Security

ROUTING FUNDAMENTALS

- Resolve issues where PC A Cannot Ping PC B
- Verify RIPv2
- Implement End-to-End Data Plane Forwarding
- Troubleshoot Switch and Router Trunking
- Configure Router-on-a-stick

INFRASTRUCTURE SERVICES

- Identify and Correct any Ping Problems
- Identify Conflicts on IOS DHCP Servers
- Match Subnets with ACLs
- Configure NTP Client/Server

INFRASTRUCTURE MAINTENANCE

- Configure Switch Management Address
- Protect the CLI with IPv4 ACLs
- Use SCP to Copy IOS Images
- Configure Different Enable Passwords

BASIC BASH SHELL CONFIGURATION

- Create shortcuts with alias
- Customize environment variables
- Configure shell options
- Save configuration by editing login and shell startup scripts