ICND1 v2.0 Interconnecting Cisco Networking Devices Part 1

CCENT & Part of CCNA Rout/Switch

Course Length: 5 days
Course Delivery: Traditional Classroom • Online Live

Course Overview

Interconnecting Cisco Networking Devices, Part 1 (ICND1) v2.0 is a five-day, instructor-led training course that teaches learners how to install, operate, configure, and verify a basic IPv4 and IPv6 network, including configuring a LAN switch, configuring an IP router, connecting to a WAN, and identifying basic security threats. Optionally, this course can be followed by the Interconnecting Cisco Networking Devices, Part2 (ICND2) v2.0 course, which covers topics in more depth and teaches learners how to perform basic troubleshooting steps in enterprise branch office networks, preparing learners for Cisco CCNA certification.

Audience

Target Candidate: Individuals seeking the Cisco CCENT certification, or Cisco CCNA Routing and Switching certification. The course is also appropriate for pre-sales and post-sales network engineers involved in the installation and support of enterprise branch office networks.

- **Key Job Tasks:**
  - **Configure:** Implement the identified solution by applying the planned implementation processes using Cisco IOS commands and applications in the correct order to the selected devices and portions of the network.
  - Verify: Use the appropriate show and debug commands and applications to ensure that the solution was correctly implemented and is performing as desired.
- **Job roles:** Entry Level Network Engineer, Network Administrator, Network Support Technician or Help Desk Technician.

Prerequisites

- Basic computer literacy
- Basic PC operating system navigation skills
- Basic Internet usage skills
- Basic IP address knowledge

At the end of this training course, you'll be able to:

- Describe network fundamentals and build simple LANs
- Establish Internet connectivity
- Manage network device security
- Expand small- to medium-sized networks with WAN connectivity
- Describe IPv6 basics

Outline

- Module 1: Building a Simple Network

  Lesson 1: Exploring the Functions of Networking

  - What Is a Network?
  - Physical Components of a Network
  - Interpreting a Network Diagram
  - Impact of User Applications on the Network
  - Characteristics of a Network
  - Physical vs. Logical Topologies
  - Summary

  Lesson 2: Understanding the Host-to-Host Communications Model

  - Introducing Host-to-Host Communications
  - OSI Reference Model
  - TCP/IP Protocol Suite
  - Encapsulation and De-Encapsulation
  - Peer-to-Peer Communications
  - Summary

  Lesson 3: Introducing LANs

  - Local Area Networks
  - LAN Components
  - Need for Switches
  - Switches
  - Summary

  Lesson 4: Operating Cisco IOS Software

  - Cisco IOS Software Features and Functions
  - Cisco IOS CLI Functions
  - User EXEC Mode

- Privileged EXEC Mode
- Help Functions in the CLI
- CLI Error Messages
- Managing Cisco IOS Configurations
- Improving the User Experience in the CLI
- Summary

Lesson 5: Starting a Switch

- Switch Installation
- Switch LED Indicators
- Connecting to a Console Port
- Basic Switch Configuration
- Verifying the Switch Initial Startup Status
- Summary

Lesson 6: Understanding Ethernet and Switch Operation

- Ethernet LAN Connection Media
- Ethernet Frame Structure
- MAC Addresses
- Switching Operation
- Duplex Communication
- Configuring Duplex and Speed Options
- Summary

Lesson 7: Troubleshooting Common Switch Media Issues

- Common Troubleshooting Tools
- Media Issues
- Troubleshooting Switch Media Issues
- Port Issues
- Troubleshooting Port Issues
- Summary

Lesson 8: Module Summary

- References

Lesson 9: Module Self-Check

Module 2: Establishing Internet Connectivity

Lesson 1: Understanding the TCP/IP Internet Layer

- Internet Protocol
- IPv4 Address Representation
- IPv4 Header Address Fields
- Decimal and Binary Systems
- Decimal-to-Binary Conversion
- IP Address Classes
- Reserved IPv4 Addresses
- Domain Name System
- Verifying the IPv4 Address of a Host
- Summary

Lesson 2: Understanding IP Addressing and Subnets

- Subnets
- Subnet Masks
- Octet Values of a Subnet Mask
- Default Gateways
- Computing Usable Subnetworks and Hosts
- Applying Subnet Masks
- Determining the Network Addressing Scheme
- Example: Addressing Scheme
- Variable-Length Subnet Mask
- VLSM Example
- Summary

Lesson 3: Understanding the TCP/IP Transport Layer

- TCP/IP Transport Layer Functions
- Reliable vs. Best-Effort Transport
- TCP vs. UDP Analogy
- UDP Characteristics
- TCP Characteristics
- TCP/IP Applications
- Summary

Lesson 4: Exploring the Functions of Routing

- Role of a Router
- Router Characteristics
- Router Functions
- Path Determination
- Routing Table
- Types of Routes

- Dynamic Routing Protocols
- Summary

Lesson 5: Configuring a Cisco Router

- Initial Router Startup
- Initial Router Setup
- Configuring Router Interfaces
- Configuring the Cisco Router IP Address
- Verifying Interface Configuration and Status
- Exploring Connected Devices
- Cisco Discovery Protocol
- Discovering Neighbors Using Cisco Discovery Protocol
- Summary

Lesson 6: Exploring the Packet Delivery Process

- Layer 2 Addressing
- Layer 3 Addressing
- Address Resolution Protocol
- Host-to-Host Packet Delivery
- Role of a Switch in Packet Delivery
- Summary

Lesson 7: Enabling Static Routing

- Routing Operations
- Static and Dynamic Routing Comparison
- When to Use Static Routing
- Static Route Configuration
- Default Routes
- Static Route Configuration Verification
- Summary

Lesson 8: Managing Traffic Using ACLs

- Using ACLs
- ACL Operation
- ACL Wildcard Masking
- Wildcard Bit Mask Abbreviations
- Types of ACLs
- Testing an IP Packet Against a Numbered Standard Access List
- Basic Configuration of Numbered Standard IPv4 ACLs
- Summary

Lesson 9: Enabling Internet Connectivity

- The Demarcation Point
- Dynamic Host Configuration Protocol
- Options for Configuring a Provider-Assigned IP Address
- Configuring a Static Provider-Assigned IP Address
- Configuring a DHCP Client
- Public vs. Private IPv4 Addresses
- Introducing NAT
- Types of Addresses in NAT
- Types of NAT
- Understanding Static NAT
- Configuring Static NAT
- Verifying Static NAT Configuration
- Understanding Dynamic NAT
- Configuring Dynamic NAT
- Verifying Dynamic NAT Configuration
- Understanding PAT
- Configuring PAT
- Verifying PAT Configuration
- Troubleshooting NAT
- Troubleshooting NAT Case Study
- Summary

Lesson 10: Module Summary

- References

Lesson 11: Module Self-Check

Module 3: Managing Network Device Security

Lesson 1: Securing Administrative Access

- Network Device Security Overview
- Securing Access to Privileged EXEC Mode
- Securing Console Access
- Securing Remote Access
- Enabling Remote Access Connectivity
- Limiting Remote Access with ACLs
- External Authentication Options
- Configuring the Login Banner
- Summary

Lesson 2: Implementing Device Hardening

- Securing Unused Ports
- Port Security
- Port Security Configuration
- Port Security Verification
- Disabling Unused Services
- Network Time Protocol
- Configuring NTP
- Verifying NTP
- Summary

Lesson 3: Implementing Traffic Filtering with ACLs

- Using ACLs to Filter Network Traffic
- ACL Operation
- Applying ACLs to Interfaces
- The Need for Extended ACLs
- Configuring Numbered, Extended IPv4 ACLs
- Configuring Named ACLs
- ACL Configuration Guidelines
- Monitoring ACLs
- Troubleshooting Common ACL Errors
- Summary

Lesson 4: Module Summary

- References

Lesson 5: Module Self-Check

Module 4: Building a Medium-Sized Network

Lesson 1: Implementing VLANs and Trunks

- Issues in a Poorly Designed Network
- VLAN Introduction
- Trunking with 802.1Q
- Creating a VLAN
- Assigning a Port to a VLAN
- Configuring an 802.1Q Trunk
- VLAN Design Considerations
- Physical Redundancy in a LAN
- Summary

Lesson 2: Routing Between VLANs

- Purpose of Inter-VLAN Routing
- Options for Inter-VLAN Routing
- Configuring a Router with a Trunk Link
- Summary

Lesson 3: Using a Cisco Network Device as a DHCP Server

- Need for a DHCP Server
- Understanding DHCP
- Configuring a DHCP Server
- Monitoring DHCP Server Functions
- DHCP Relay Agent
- Summary

Lesson 4: Introducing WAN Technologies

- Introducing WANs
- WANs vs. LANs
- Role of Routers in WANs
- WAN Communication Link Options
- Point-to-Point Connectivity
- Configuring a Point-to-Point Link
- Summary

Lesson 5: Introducing Dynamic Routing Protocols

- Purpose of Dynamic Routing Protocols
- Interior and Exterior Routing Protocols
- Distance Vector and Link-State Routing Protocols
- Understanding Link-State Routing Protocols
- Summary

Lesson 6: Implementing OSPF

- Introducing OSPF
- OSPF Adjacencies
- SPF Algorithm
- Router ID
- Configuring Single-Area OSPF
- Verifying OSPF Configuration
- Summary

Lesson 7: Module Summary

- References

Lesson 8: Module Self-Check

Module 5: Introducing IPv6

Lesson 1: Introducing Basic IPv6

- IPv4 Addressing Exhaustion Workarounds
- IPv6 Features
- IPv6 Addresses
- IPv6 Unicast Addresses
- IPv6 Addresses Allocation
- Basic IPv6 Connectivity
- Summary

Lesson 2: Understanding IPv6

- IPv6 Header Changes and Benefits
- ICMPv6
- Neighbor Discovery
- Stateless Autoconfiguration
- Summary

Lesson 3: Configuring IPv6 Routing

- Routing for IPv6
- Static Routing
- OSPFv3
- Summary

Lesson 4: Module Summary

- References

Lesson 5: Module Self-Check

Module S: ICND1 Superlab

Lab Outline

Lab 1-1: Performing Switch Startup and Initial Configuration
Lab 1-2: Troubleshooting Switch Media Issues

Lab 2-1: Performing Initial Router Setup and Configuration
Lab 2-2: Connecting to the Internet
Lab 3-1: Enhancing the Security of the Initial Configuration
Lab 3-2: Device Hardening
Lab 3-3: Filtering Traffic with ACLs
Lab 4-1: Configuring Expanded Switched Networks
Lab 4-2: Configuring DHCP Server
Lab 4-3: Implementing OSPF
Lab 5-1: Configure and Verify Basic IPv6
Lab 5-2: Configure and Verify Stateless Autoconfiguration
Lab 5-3: Configure and Verify IPv6 Routing
Lab S-1: ICND1 Superlab

To register or for more information call our office **(208) 898-9036** or email **register@leapfoxlearning.com**