



# ICND2 v2.0 Interconnecting Cisco Networking Devices Part 2

**Course Length:** 5 days

**Course Delivery:** Traditional Classroom • Online Live

## Course Overview

The Interconnecting Cisco Networking Devices, Part 2 (ICND2) v2.0 course provides entry-level network administrators, network support, and help desk technicians with the knowledge and skills needed to install, configure, operate, and troubleshoot a small enterprise network.

ICND2 v2.0 focuses on understanding redundant topologies, troubleshooting common networking issues, configuring EIGRP and multiarea OSPF in both IPv4 and IPv6, understanding WAN technologies, and becoming familiar with device management and Cisco licensing. The learner will encounter more troubleshooting and more lab time than with the previous version of ICND2.

## 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

- Understand network fundamentals
- Implement local area networks
- Implement Internet connectivity
- Manage network device security
- Implement WAN connectivity
- Implement basic IPv6 connectivity



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

- Operate a medium-sized LAN with multiple switches, supporting VLANs, trunking, and spanning tree
- Troubleshoot IP connectivity
- Configure and troubleshoot EIGRP in an IPv4 environment, and configure EIGRP for IPv6
- Configure and troubleshoot OSPF in an IPv4 environment, and configure OSPF for IPv6
- Define characteristics, functions, and components of a WAN
- Describe SNMP, syslog, and NetFlow, and manage Cisco device configurations, Cisco IOS images, and licenses

**Outline**

- Module 5: Review  
Module 1: Implementing Scalable Medium-Sized Networks

*Lesson 1: Troubleshooting VLAN Connectivity*

- VLAN Overview
- Creating VLANs
- Trunk Operation
- Configuring Trunks
- Dynamic Trunking Protocol
- VLAN Troubleshooting
- Trunk Troubleshooting
- Summary

*Lesson 2: Building Redundant Switched Topologies*

- Issues in Redundant Topologies
- Spanning-Tree Operation
- Types of Spanning-Tree Protocols
- Per VLAN Spanning Tree Plus
- Modifying the Bridge ID
- Analyzing the STP Topology
- Spanning-Tree Failure Consequences
- PortFast and BPDU Guard
- Summary

*Lesson 3: Improving Redundant Switched Topologies with EtherChannel*

- The Need for EtherChannel
- Advantages of EtherChannel
- EtherChannel Protocols
- Configuring EtherChannel
- Verifying EtherChannel



- Summary

#### *Lesson 4: Understanding Layer 3 Redundancy*

- The Need for Default Gateway Redundancy
- Default Gateway Redundancy
- HSRP
- HSRP Interface Tracking
- HSRP Load Balancing
- Gateway Load Balancing Protocol
- Summary

#### *Lesson 5: Module Summary*

- References

#### *Lesson 6: Module Self-Check*

### Module 2: Troubleshooting Basic Connectivity

#### *Lesson 1: Troubleshooting IPv4 Network Connectivity*

- Components of Troubleshooting End-to-End Connectivity
- Verification of End-to-End Connectivity
- Verification of Physical Connectivity Issue
- Identification of Current and Desired Path
- Default Gateway Issues
- Name Resolution Issues
- ACL Issues
- Summary

#### *Lesson 2: Troubleshooting IPv6 Network Connectivity*

- IPv6 Unicast Addresses
- Troubleshooting End-to-End IPv6 Connectivity
- Verification of End-to-End IPv6 Connectivity
- Identification of Current and Desired IPv6 Path
- Default Gateway Issues in IPv6
- Name Resolution Issues in IPv6
- ACL Issues in IPv6
- Summary

#### *Lesson 3: Module Summary*

- References



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#### *Lesson 4: Module Self-Check*

### Module 3: Implementing an EIGRP-Based Solution

#### *Lesson 1: Implementing EIGRP*

- Dynamic Routing Protocols
- Administrative Distance
- EIGRP Features
- EIGRP Path Selection
- EIGRP Metric
- EIGRP Configuration
- Verification of EIGRP Configuration
- Load Balancing with EIGRP
- Summary

#### *Lesson 2: Troubleshooting EIGRP*

- Components of Troubleshooting EIGRP
- Troubleshooting EIGRP Neighbor Issues
- Troubleshooting EIGRP Routing Table Issues
- Summary

#### *Lesson 3: Implementing EIGRP for IPv6*

- EIGRP for IPv6
- EIGRP for IPv6 Commands
- EIGRP for IPv6 Configuration Example
- Summary

#### *Lesson 4: Module Summary*

- References

#### *Lesson 5: Module Self-Check*

### Module 4: Implementing a Scalable, Multiarea Network, OSPF-Based Solution

#### *Lesson 1: OSPF Overview*

- Overview
- Link-State Routing Protocol Overview
- Link-State Routing Protocol Data Structures
- OSPF Metric
- Establishing OSPF Neighbor Adjacencies



- Building a Link-State Database
- OSPF Area Structure
- Summary

#### *Lesson 2: Multiarea OSPF IPv4 Implementation*

- Single-Area vs. Multiarea OSPF
- Planning for the Implementation of OSPF
- Multiarea OSPF Configuration
- Multiarea OSPF Verification
- Summary

#### *Lesson 3: Troubleshooting Multiarea OSPF*

- OSPF Neighbor States
- Components of Troubleshooting OSPF
- Troubleshooting OSPF Neighbor Issues
- Troubleshooting OSPF Routing Table Issues
- Troubleshooting OSPF Path Selection
- Summary

#### *Lesson 4: Examining OSPFv3*

- OSPFv3 Key Characteristics
- OSPFv3 Configuration
- OSPFv3 Configuration Verification
- Summary

#### *Lesson 5: Module Summary*

- References

#### *Lesson 6: Module Self-Check*

### Module 5: Wide-Area Networks

#### *Lesson 1: Understanding WAN Technologies*

- Overview
- Introduction to WAN Technologies
- WAN Devices
- Serial WAN Cabling
- WAN Layer 2 Protocols
- WAN Link Options
- Summary



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### *Lesson 2: Configuring Serial Encapsulation*

- Overview
- Serial Communication Links
- Configuration of a Serial Interface
- HDLC Protocol
- Point-to-Point Protocol
- PPP Configuration
- PPP Authentication: PAP
- PPP Authentication: CHAP
- Configuring CHAP for PPP Authentication
- Verifying CHAP Configuration
- Troubleshooting Serial Connections
- Summary

### *Lesson 3: Establishing a WAN Connection Using Frame Relay*

- Understanding Frame Relay
- Frame Relay Topologies
- Frame Relay Reachability Issues
- Frame Relay Signaling
- Frame Relay Address Mappings
- Configuring Frame Relay
- Point-to-Point vs. Multipoint
- Configuring Point-to-Point Frame Relay
- Configuring Multipoint Frame Relay
- Verifying Frame Relay Configuration
- Summary

### *Lesson 4: Introducing VPN Solutions*

- VPNs and Their Benefits
- Cisco SSL VPN Solutions
- Introducing IPsec
- Summary

### *Lesson 5: Configuring GRE Tunnels*

- GRE Tunnel Overview
- GRE Tunnel Configuration
- GRE Tunnel Verification
- Summary



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### *Lesson 6: Module Summary*

- References

### *Lesson 7: Module Self-Check*

## Module 6: Network Device Management

### *Lesson 1: Configuring Network Devices to Support Network Management Protocols*

- SNMP Overview
- SNMP Versions
- Obtaining Data from an SNMP Agent
- SNMP Configuration
- Syslog Overview
- Syslog Message Format
- Syslog Configuration
- NetFlow Overview
- NetFlow Architecture
- Netflow Configuration
- Summary

### *Lesson 2: Managing Cisco Devices*

- Router Internal Components Overview
- ROM Functions
- Stages of the Router Power-On Boot Sequence
- Configuration Register
- Changing the Configuration Register
- Locating Cisco IOS Image Files
- Loading Cisco IOS Image Files
- Loading Cisco IOS Configuration Files
- Cisco IOS Integrated File System and Devices
- Managing Cisco IOS Images
- Deciphering Cisco IOS Image Filenames
- Creating the Cisco IOS Image Backup
- Upgrading Cisco IOS Images
- Managing Device Configuration Files
- Password Recovery
- Summary

### *Lesson 3: Licensing*

- Licensing Overview
- Licensing Verification



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- Permanent License Installation
- Evaluation License Installation
- Backing up the License
- Uninstalling the License
- Summary

*Lesson 4: Module Summary*

- References

*Lesson 5: Module Self-Check*

Module 5: ICND2 Superlab

**Lab Outline**

- Lab 5-1: Review
- Lab 1-1: Troubleshooting VLANs and Trunks
- Lab 1-2: Optimizing STP
- Lab 1-3: Configuring EtherChannel
- Lab 2-1: Troubleshooting IP Connectivity
- Lab 3-1: Implementing EIGRP
- Lab 3-2: Troubleshooting EIGRP
- Lab 3-3: Implementing EIGRP for IPv6
- Lab 4-1: Configuring Multiarea OSPF
- Lab 4-2: Troubleshooting Multiarea OSPF
- Lab 4-3: Configuring OSPF for IPv6
- Lab 5-1: Configuring and Troubleshooting a Serial Connection
- Lab 5-2: Establishing a Frame Relay WAN
- Lab 5-3: Establishing a GRE Tunnel
- Lab 6-1: SNMP and Syslog Basic Configuration
- Lab 6-2: Analyzing NetFlow Data
- Lab 6-3: Managing Cisco Devices and Licensing
- Lab 5-2: ICND2 Superlab

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



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