

Interconnecting Cisco Networking Devices, Part 2 (ICND2) v3.0

COURSE OVERVIEW:

Interconnecting Cisco Networking Devices, Part 2 (ICND2) v3.0 is a five-day, instructor-led training course that teaches learners how to perform basic troubleshooting steps in enterprise branch office networks, preparing learners for Cisco CCNA certification.

Key additions to this latest revision include; understanding of Quality of Service (QoS) elements and their applicability, how virtualized and cloud services will interact and impact enterprise networks, along with an overview of network programmability and the related controller types and tools that are available to support software defined network architectures.

A full suite of labs have been developed using the virtual IOS environment with flexible topologies that reinforce concepts with hands-on, guided discovery and challenge labs that align to each lesson module.

WHO WILL BENEFIT FROM THIS COURSE?

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

Job roles: Entry-level network engineer, network administrator, network support technician, or help desk technician.

PREREQUISITES:

The knowledge and skills that a learner must have before attending this course are as follows:

- Understand network fundamentals
- Implement local area networks
- Implement Internet connectivity
- Manage network devices
- Secure network devices
- Implement basic IPv6 connectivity

RELATED COURSES:

Interconnecting Cisco Networking Devices, Part 1 (ICND1) v3.0

COURSE OBJECTIVES:

To provide the student with the knowledge, skills and attitudes required to:

- Install, operate, and troubleshoot a medium-sized network, including connecting to a WAN and implementing network security.
- Describe the effects of new technologies such as loE, IoT, IWAN, and SDN on network evolution.
- Operate a medium-sized LAN with multiple switches, supporting VLANs, trunking, and spanning tree
- Troubleshoot IP connectivity
- Describe how to 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 how device management can be implemented using the traditional and intelligent ways.

COURSE OUTLINE:

Module 1: Implementing Scalable Medium-Sized Networks

Lesson 1: Troubleshooting VLAN Connectivity

- VLAN Overview
- Trunk Operation
- Dynamic Trunking Protocol
- VLAN Trunking Protocol
- Discovery Lab 1: Troubleshoot VLANs and Trunks
- Challenge Lab

Lesson 2: Building Redundant Switched Topologies

- Physical Redundancy in a LAN
- Issues in Redundant Topologies
- Loop Resolution with STP
- Spanning-Tree Operation
- Spanning-Tree Operation Example
- Types of Spanning-Tree Protocols
- Comparison of Spanning-Tree Protocols
- Per VLAN Spanning Tree Plus
- PVST+ Extended Bridge ID
- PortFast and BPDU Guard
- Configuring PortFast and BPDU Guard
- Discovery Lab 2: Configure Root Bridge and Analyze STP Topology
- Discovery Lab 3: Troubleshoot STP Issues
- Challenge Lab

Lesson 3: Improving Redundant Switched Topologies with EtherChannel

- EtherChannel Overview
- EtherChannel Protocols
- Discovery Lab 4: Configure and Verify EtherChannel
- Challenge Lab

Lesson 4: Understanding Layer 3 Redundancy

- Need for Default Gateway Redundancy
- Understanding FHRP
- Understanding HSRP
- Discovery Lab 5: Configure and Verify HSRP
- Discovery Lab 6: Troubleshoot HSRP
- Challenge Lab

Module 2: Troubleshooting Basic Connectivity

Lesson 1: Troubleshooting IPv4 Network Connectivity

- Troubleshooting Guidelines
- Troubleshooting Physical Connectivity Issue
- Identification of Current and Desired Path
- Using SPAN for Troubleshooting
- Troubleshooting Default Gateway Issues
- Troubleshooting Name Resolution Issue
- Troubleshooting ACL Issues
- Discovery Lab 7: Use Troubleshooting Tools
- Discovery Lab 8: Configure and Verify IPv4 Extended Access Lists
- Discovery Lab 9: Troubleshoot IPv4 Network Connectivity
- Challenge Lab

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
- Troubleshooting Default Gateway Issues in IPv6
- Troubleshooting Name Resolution Issues in IPv6
- Troubleshooting ACL Issues in IPv6
- Discovery Lab 10: Configure and Verify IPv6 Extended Access Lists
- Discovery Lab 11: Troubleshoot IPv6 Network Connectivity
- Challenge Lab

Module 3: Implementing an EIGRP-Based Solution

Lesson 1: Implementing EIGRP

- Dynamic Routing Protocols
- Administrative Distance
- EIGRP Features
- EIGRP Path Selection
- EIGRP Metric
- Discovery 12: Configure and Verify EIGRP
- EIGRP Load Balancing
- Challenge Lab

Lesson 2: Implementing EIGRP for IPv6

- EIGRP for IPv6
- Discovery Lab 13: Configure and Verify EIGRP for IPv6
- Challenge Lab

Lesson 3: Troubleshooting EIGRP

- Troubleshooting EIGRP Issues
- Troubleshooting EIGRP Neighbor Issues
- Troubleshooting EIGRP Routing Table Issues
- Troubleshooting EIGRP for IPv6 Issues
- Discovery Lab 14: Troubleshoot EIGRP
- Challenge Lab

Module 4: Summary Challenge

Lesson 1: Implementing and Troubleshooting Scalable Medium-Sized Network -1

- Challenge Lab

Lesson 2: Implementing and Troubleshooting Scalable Medium-Sized Network -2

- Challenge Lab

Module 5: Implement a Scalable OSPF-Based Solution

Lesson 1: Understanding OSPF

- Link-State Routing Protocol Overview
- Link-State Routing Protocol Data Structures
- Introducing OSPF
- Establishing OSPF Neighbor Adjacencies
- OSPF Neighbor States
- SPF Algorithm
- Building a Link-State Database
- OSPF Packet Types
- Discovery Lab 15: Configure and Verify Single-Area OSPF
- Challenge Lab

Lesson 2: Implementing Multiarea OSPF IPv4

- OSPF Area Structure
- Single-Area vs. Multiarea OSPF
- Discovery Lab 16: Configure and Verify Multiarea OSPF
- Challenge Lab

Lesson 3: Implementing OSPFv3 for IPv6

- OSPFv3 for IPv6
- Discovery 17 Lab: Configure and Verify OSPFv3
- Challenge Lab

Lesson 4: Troubleshooting Multiarea OSPF

- Components of Troubleshooting OSPF
- Troubleshooting OSPF Neighbor Issues
- Troubleshooting OSPF Routing Table Issues
- Troubleshooting OSPF Path Selection
- Troubleshooting OSPFv3 Issues
- Discovery Lab 18: Troubleshoot Multiarea OSPF
- Challenge Lab

Module 6: Wide-Area Networks

Lesson 1: Understanding WAN Technologies

- Introduction to WAN Technologies
- WAN Topology Options
- WAN Connectivity Options
- Provider-Managed VPNs
- Enterprise-Managed VPNs
- WAN Devices
- Challenge Lab

Lesson 2: Understanding Point-to-Point Protocols

- Serial Point-to-Point Communication Links
- Point-to-Point Protocol
- Discovery Lab 19: Configure Serial Interface and PPP
- Discovery Lab 20: Configure and Verify MLP
- Discovery Lab 21: Configure and Verify PPPoE Client
- Challenge Lab

Lesson 3: Configuring GRE Tunnels

- GRE Tunnel Overview
- Discovery 22: Configure and Verify GRE Tunnel
- Challenge

Lesson 4: Configuring Single-Homed EBGp

- Interdomain Routing
- Introduction to EBGp
- Discovery Lab 23: Configure and Verify Single Homed EBGp
- Challenge Lab

Module 7: Network Device Management

Lesson 1: Implementing Basic Network Device Management and Mitigating Threats at Access Layer

- External Authentication Options
- Discovery 24: Configure External Authentication Using RADIUS and TACACS+
- SNMP Overview
- Discovery 25: Configure SNMP
- Challenge Lab

Lesson 2: Evolution of Intelligent Networks

- Switch Stacking
- Cloud Computing and Its Effect on Enterprise Network
- Overview of Network Programmability in Enterprise Network
- Application Programming Interfaces
- Cisco APIC-EM
- Introducing Cisco Intelligent WAN
- Challenge Lab

Lesson 3: Introducing QoS

- Traffic Characteristics
- Need for QoS
- QoS Mechanisms Overview

Module 8: Summary Challenge

Lesson 1: Implementing and Troubleshooting Scalable Multiarea

- Challenge Lab

Lesson 2: Implementing and Troubleshooting Scalable Multiarea Network -2

- Challenge Lab

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