

# Cisco CCNA Routing and Switching Certification



## Course Outline

### Module 1: Building a Simple Network

Objective: Describe network fundamentals and implement a simple LAN.

- Lesson 1: Exploring the Functions of Networking

Objective: Identify the components of a computer network and describe their basic characteristics

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

Objective: Understand the model of host-to-host communication

- Lesson 3: Introducing LANs

Objective: Describe LANs and the role of switches within LANs

- Lesson 4: Operating Cisco IOS Software

Objective: Describe the features and functions of the Cisco IOS Software

- Lesson 5: Starting a Switch

Objective: Install a switch and perform the initial configuration

- Lesson 6: Understanding Ethernet and Switch Operation

Objective: Describe Ethernet as the network access layer of TCP/IP and describe the operation of switches

- Lesson 7: Troubleshooting Common Switch Media Issues

Objective: Identify and resolve common switched network issues

## **Module 2: Establishing Internet Connectivity**

Objective: Establish Internet connectivity

- Lesson 1: Understanding the TCP/IP Internet Layer  
Objective: Describe IPv4 and its addressing scheme
- Lesson 2: Understanding IP Addressing and Subnets  
Objective: Describe subnets, subnetting, and the role of subnet masks
- Lesson 3: Understanding the TCP/IP Transport Layer  
Objective: Describe the TCP/IP transport layer
- Lesson 4: Exploring the Functions of Routing  
Objective: Define the role, components and function of a Router Understand how a Routing Table conveys information Understand how a Router chooses a path or route Understand how Dynamic Routing protocols calculate and communicate routing information
- Lesson 5: Configuring a Cisco Router  
Objective: Implement basic configuration on a Cisco router
- Lesson 6: Exploring the Packet Delivery Process  
Objective: Understand host-to-host communications across switches and routers
- Lesson 7: Enabling Static Routing  
Objective: Describe the operation, benefits, and limitations of static routing
- Lesson 8: Learning the Basics of ACL  
Objective: Describe the operation of ACLs and their applications in the network
- Lesson 9: Enabling Internet Connectivity  
Objective: Configure Internet access using DHCP clients, NAT, and PAT on Cisco routers

## **Module 3: Summary Challenge**

Objective: Configure and troubleshoot topics learn in Module 1 and Module 2.

- Lesson 1: Establish Internet Connectivity  
Objective: Establish internet connectivity.
- Lesson 2: Troubleshoot Internet Connectivity  
Objective: Troubleshoot internet connectivity.

## **Module 4: Implementing Scalable Medium-Sized Networks**

Objective: Implementing Scalable Medium-Sized Networks

- Lesson 1: Implementing and Troubleshooting VLANs and Trunks  
Objective: Implementing and troubleshooting VLANs and trunks.
- Lesson 2: Building Redundant Switched Topologies  
Objective: Build redundant switched topologies
- Lesson 3: Improving Redundant Switched Topologies with EtherChannel  
Objective: Configure link aggregation using EtherChannel
- Lesson 4: Routing Between VLANs  
Objective: Describe the application and configuration of inter-VLAN routing
- Lesson 5: Using a Cisco IOS Network Device as a DHCP Server  
Objective: Configure a Cisco IOS DHCPv4 server on a Cisco router and switch
- Lesson 6: Understanding Layer 3 Redundancy  
Objective: Describe the purpose of Layer 3 redundancy protocols
- Lesson 7: Implementing RIPv2  
Objective: Describe the operation and configuration of RIPv2.

## **Module 5: Introducing IPv6**

Objective: Describe IPv6 basics

- Lesson 1: Introducing Basic IPv6  
Objective: Describe IPv6 main features, addresses.
- Lesson 2: Understanding IPv6 Operation  
Objective: Describe IPv6 operations and basic IPv6 configuration.
- Lesson 3: Configuring IPv6 Static Routes  
Objective: Identify routing protocols for IPv6

## **Module 6: Troubleshooting Basic Connectivity**

Objective: Troubleshoot IP connectivity

- Lesson 1: Troubleshooting IPv4 Network Connectivity  
Objective: Troubleshoot end-to-end connectivity in an IPv4 network

- Lesson 2: Troubleshooting IPv6 Network Connectivity

Objective: Troubleshoot connectivity in an IPv6 network

## **Module 7: Implementing Network Device Security**

Objective: Configure, manage and monitor Cisco devices

- Lesson 1: Securing Administrative Access  
Objective: Implement a basic security configuration
- Lesson 2: Implementing Device Hardening  
Objective: Implement basic steps to harden network devices
- Lesson 3: Implementing Advance Security  
Objective: Describe how network security is implemented.

## **Module 8: Implementing an EIGRP-Based Solution**

Objective: Describe how to configure and troubleshoot EIGRP in an IPv4 environment, and configure EIGRP for IPv6

- Lesson 1: Implementing EIGRP  
Objective: Introduce dynamic routing protocols, EIGRP, and its basic configuration
- Lesson 2: Implementing EIGRP for IPv6  
Objective: Describe the implementation of EIGRP for IPv6
- Lesson 3: Troubleshooting EIGRP  
Objective: Describe how to troubleshoot common EIGRP issues.

## **Module 9: Summary Challenge**

Objective: Implement and troubleshoot a scalable medium sized network.

- Lesson 1: Troubleshooting a Medium-Sized Network  
Objective: To troubleshoot a medium sized network.
- Lesson 2: Troubleshooting Scalable Medium-Sized Network  
Objective: To troubleshoot a scalable medium sized network.

## **Module 10: Implementing a Scalable OSPF-Based Solution**

Objective: Configure and troubleshoot OSPF in an IPv4 environment and configure OSPF for IPv6

- Lesson 1: Understanding OSPF  
Objective: Describe the basic components and terms of OSPF
- Lesson 2: Multiarea OSPF IPv4 Implementation  
Objective: Describe how to implement a multiarea OSPF

- Lesson 3: Implementing OSPFv3 for IPv6  
Objective: Describe how to implement OSPF in an IPv6 network
- Lesson 4: Troubleshooting Multiarea OSPF  
Objective: Troubleshoot multiarea OSPF

## **Module 11: Implementing Wide-Area Networks**

Objective: Define characteristics, functions, and components of a WAN

- Lesson 1: Understanding WAN Technologies  
Objective: Learn basic WAN concepts.
- Lesson 2: Understanding Point-to-Point Protocols  
Objective: Configure a serial connection using PPP.
- Lesson 3: Configuring GRE Tunnels  
Objective: Configure GRE tunnels
- Lesson 4: Configuring Single-Homed EBG  
Objective: Configure and verify single homed EBG

## **Module 12: Network Device Management**

Objective: Describe how device management can be implemented using the traditional and intelligent ways.

- Lesson 1: Implementing Basic Network Device Management  
Objective: Configure System Message Logging and SNMP.
- Lesson 2: Evolution of Intelligent Networks  
Objective: Describe the smart network management solutions like APIC-EM and IWAN
- Lesson 3: Introducing QoS  
Objective: Describe basic QoS concepts.
- Lesson 4: Managing Cisco Devices  
Objective: Describe the management of Cisco devices
- Lesson 5: Licensing  
Objective: Understand licensing under Cisco IOS 15. In this lesson we can use an EAI to demonstrate license installation and verification.