

# **Implementing Cisco IP Routing (CS-ROUTE)**

**Modality: Virtual Classroom**

**Duration: 5 Days**

**CLC: 35 Units**

## **About this course:**

It is very important for those enrolled in this course to be familiar with IP Routing and what it entails. The term IP routing is used primarily to define a set of protocols, use to identify the path which a set of data responds to, and follows to be transitioned across multiple networks from the starting point (usually referred to as the source) to the destination. These protocols are used to aid the routers set up a forwarding table corresponding to the desires destinations with next hop addresses.

This Cisco Course, known as Implementing Cisco IP Routing v2.x (ROUTE), is a five day course, considered to be of an advanced level, usually led by an instructor to help the enrolled students be prepared for the Cisco CCNP credential. The course is part of the material used for CCNP Switching and Routing training. The objective of this course is to help the students establish their expertise in CCNA Routing and switching by obtaining the relevant knowledge and information. Additionally, it will also help the students in developing their skills in deployment, planning, and monitoring of a scalable routing network. It provides experiential learning experience to the students by practical implementation and usage of the software.

In addition, this course will aid all those planning to attempt the exam for Cisco 300-101 ROUTE: Implementing Cisco IP Routing.

Cisco certified network engineers, can earn up to **\$77,484/-** on average, per annum.

## **Course Objectives:**

Once the course is complete, the IT professional will be able to:

- Define routing protocols after understanding them, along with explaining different remote connectivity choices available inclusive of their significance as well as influence on deploying and routing RIPng.
- Understand the process of configuring EIGRP in IPv4 and IPv6 environments
- Understand the process of configuring OSPF in IPv4 and IPv6 environments
- Understand the process of using filtering mechanisms for deploying route redistribution
- Understand the process of using IP SLA and policy based routing for incorporating path control.
- Understand and explain the process of facilitating enterprise internet connectivity.

- Understand the process of securing and protecting Cisco routers using the officially declared best practices along with the process of configuring authentication for routing protocols.

## **Audience:**

The course is designed to be undertaken by those students which aim to become network professionals, and for those who have prior knowledge from CCNA courses. Following are some of the jobs titles you may come across.

- Support Engineers
- Network Engineers
- System Engineers
- Network Technicians

## **Pre-Requisites:**

Prior to enrolling in this course, students must be aware of the following:

- Fundamentals of networking and their explanation
- The process of enabling WAN Connectivity (IPv4 and IPv6) and Internet
- The process of performing network device security management
- The process of running a mediocre sized LAN using multiple switches, trunking, backing VLANs, and spanning tree.
- The process of troubleshooting IP connectivity (IPv4 and IPv6)
- The process of configuring as well as troubleshooting OSPF and EIGRP(IPv4 and IPv6)
- The process of configuring different device for accessing syslog, and SNMP, along with NetFlow
- The correct way of managing Cisco IOS Images, Cisco device configurations, and licenses.

## **Recommended Pre-requisite courses:**

- Interconnecting Cisco Networking Devices Part 1 v3.x (ICND1)
- CCNAX Bootcamp Interconnecting Cisco Networking Device Accelerated(ICND1+ICND2) (CCNAX)

- Interconnecting Cisco Networking Devices Part 2 v3.x (ICND2)

## Course Outline:

### Module 1: Basic Network and Routing Concepts

- Lesson 1: Differentiating Routing Protocols
- Lesson 2: Understanding Network Technologies
- Lesson 3: Connecting Remote Locations with the Headquarters
- Lesson 4: Implementing RIPng

### Module 2: EIGRP Implementation

- Lesson 1: Establishing EIGRP Neighbor Relationships
- Lesson 2: Building the EIGRP Topology Table
- Lesson 3: Optimizing EIGRP Behavior
- Lesson 4: Configuring EIGRP for IPv6
- Lesson 5: Discovering Named EIGRP Configuration

### Module 3: OSPF Implementation

- Lesson 1: Establishing OSPF Neighbor Relationships
- Lesson 2: Building the Link-State Database
- Lesson 3: Optimizing OSPF Behavior
- Lesson 4: Configuring OSPFv3

### Module 4: Configuration of Redistribution

- Lesson 1: Implementing Basic Routing Protocol Redistribution
- Lesson 2: Manipulating Redistribution Using Route Filtering

### Module 5: Path Control Implementation

- Lesson 1: Using Cisco Express Forwarding Switching
- Lesson 2: Implementing Path Control

### Module 6: Enterprise Internet Connectivity

- Lesson 1: Planning Enterprise Internet Connectivity
- Lesson 2: Establishing Single-Homed IPv4 Internet Connectivity
- Lesson 3: Establishing Single-Homed IPv6 Internet Connectivity
- Lesson 4: Improving Resilience of Internet Connectivity
- Lesson 5: Considering Advantages of Using BGP
- Lesson 6: Implementing Basic BGP Operations
- Lesson 7: Using BGP Attributes and the Path Selection Process
- Lesson 8: Controlling BGP Routing Updates
- Lesson 9: Implementing BGP for IPv6 Internet Connectivity

## Module 7: Routers and Routing Protocol Hardening

- Lesson 1: Securing Cisco Routers
- Lesson 2: Describing Routing Protocol Authentication Options
- Lesson 3: Configuring EIGRP Authentication
- Lesson 4: Configuring OSPF Authentication
- Lesson 5: Configuring BGP Authentication

### Labs

The following discovery labs are included in this course:

- Discovery 1: Configuring RIPng
- Discovery 2: Configuring and Investigating Basic EIGRP
- Discovery 3: Building The EIGRP Topology Table
- Discovery 4: EIGRP Stub Routing
- Discovery 5: EIGRP Summarization
- Discovery 6: EIGRP Load Balancing
- Discovery 7: EIGRP for IPv6 Configuration
- Discovery 8: Discovering Named EIGRP Configuration
- Discovery 9: Basic OSPF Configuration Introduction
- Discovery 10: Building the Link-State Database
- Discovery 11: OSPF Path Selection
- Discovery 12: OSPF Route Summarization
- Discovery 13: OSPF Stub Areas
- Discovery 14: Implementing OSPFv3
- Discovery 15: Basic Redistribution
- Discovery 16: Manipulate Redistribution
- Discovery 17: Manipulate Redistribution Using Route Maps
- Discovery 18: Analyzing CEF
- Discovery 19: Implementing PBR
- Discovery 20: NAT Virtual Interface
- Discovery 21: Basic IPv6 Internet Connectivity
- Discovery 22: Basic BGP Configuration
- Discovery 23: Influencing BGP Path Selection
- Discovery 24: BGP for IPv6
- Discovery 25: Configuring EIGRP Authentication
- Discovery 26: OSPF Authentication Configuration

The following challenge labs are included in this course:

- Challenge 1: Configure RIPng
- Challenge 2: Configure EIGRP
- Challenge 3: Configure and Optimize EIGRP for IPv6
- Challenge 4: Implement EIGRP for IPv4 and IPv6 Through Named Configuration
- Challenge 5: Configure OSPF
- Challenge 6: Optimize OSPF

- Challenge 7: Configure OSPFv3
- Challenge 8: Implement Redistribution Using Route Filtering
- Challenge 9: Implement Path Control
- Challenge 10: Configuring BGP
- Challenge 11: Configure Authentication for EIGRP Routes
- Challenge 12: Configure BGP Authentication