# Cisco CCNP Implementing Cisco IP Routing , Part 2 of 4: OSPF and Routing



**Meet the expert:** Carlo has worked in the computer technologies industry since the mid-90s. He is also a certified member of Microsoft, Cisco, ISACA, PMI, CompTIA,

IIC, and EC-Council. He has designed and customized courses for private and public

sectors, including college curriculums, and has worked as a lead consultant engineer

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As a certified Microsoft Instructor, Ken has focused his career on various security aspects of computer and network technology since the early 1980s. He has offered a wide variety of IT training and high level consulting projects for Fortune 500 companies globally. Through the course of his extensive career, he has taught a full line of Microsoft, CompTIA, Cisco, and other high level IT Security curricula.

**Prerequisites:** This is part 2 of the series.

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**Course description:** Implementing Cisco IP Routing is a qualifying exam for the Cisco Certified Network Professional CCNP®. This course starts with the Open Shortest Path First Protocol both describing its function as well as how OSPF routes packets and to verify and configure OSPF in a WAN. Next it describes network performance problems, considerations for routing protocols and ends with controlling and routing traffic.

**Course outline:**

**OSPF Terminology**
- Introduction
- OSPF: Open Shortest Path First
- Features of OSPF
- Characteristics of Link-State Protocol
- Advantages
- Terminology
- Router Types
- Internal and Backbone Routers
- Area Border Router
- Autonomous System Boundary Router
- BDR and DR Routers
- Summary

**OSPF Packets**
- Introduction
- What Are OSPF Packets Used For
- OSPF Hello Packet: Type 1
- OSPF DBD Packet: Type 2
- OSPF LSR and LSU Packets: Type 3 and 4
- OSPF LSAck Packet: Type 5
- Adjacent Neighbors
- Link-State Data Structures
- Summary

**OSPF Routing**
- Introduction
- Planning OSPF Deployment
- OSPF Implementation
- OSPF Verification
- OSPF Documentation
- Summary

**OSPF Verification and Configuration**
- Introduction
- Enable OSPF Routing and Network Identification
- Wildcard Mask
- Interface Bandwidth Definition and OSPF Router ID
- Demo: Configure Single-Area OSPF
- Router ID Definition
- Demo: Configure Multi-Area OSPF
- OSPF Verification: First Method
- Demo: Verify OSPF
- OSPF Verification: Second Through Fifth Methods
- Clearing the OSPF Routing Table
- Summary

**OSPF Network Types**
- Introduction
- Broadcast
- DR and BDR
- Election Manipulation and Router Priority
- Demo: Assign Router Priority
- Influencing the Election Process
- Demo: Configure Simple Authentication Key
- OSPF over MPLS
- Demo: Verify Simple Password Authentication
- NBMA
- Demo: IP Addresses
- Demo: Configure OSPF
- Demo: Routes
- Demo: Branch Routers
- Summary

**Routing Performance Issues**
- Introduction
- Usual Routing Performance Issues
- Running Different Protocols at the Same Time
- Performance Solutions for Routing Protocols
- Route Filtering
- Summary

**Multiple Routing Protocols**
- Introduction
- Simple Protocols and Complex Networks
- Multiple Protocols Running on One Network
- Complex Networks
- Redistribution
- Demo: Redistribution
- Redistributed Routes
- How to Select the Best Route
- Edge and Core Routing Protocols
- Loop Prevention and Redistribution Guidelines
- Summary

**Route Redistribution**
- Introduction
- Redistribution Command
- Demo: Redistributing into RIP
- Important Route Redistribution Information
- Demo: Redistributing into OSPF
- Default Metric for BGP, OSPF, and RIP
- Demo: Default Metrics
- Default Metric for EIGRP
- Demo: Apply Metrics for EIGRP
- Modifying the Administrative Distance

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- Demo: Modify Administrative Distance
- Changing the Default Administrative Distance
- Demo: OSPF Routes
- Demo: EIGRP Routes
- Demo:
- Summary

**Routing Update Traffic**
- Introduction
- Controlling Routing Updates
- Passive Interfaces
- Static Routes and Route Maps
- Demo: Route Maps
- Demo: Route Maps Continued
- To Define a Route Map
- Various Route-map Commands for PBR
- Using Distribute Lists
- Demo: Distribute Lists
- Define a Filter for Incoming Routing Updates
- Demo: Incoming Filter
- Define a Filter for Outgoing Routing Updates
- Demo: Outgoing Filter
- Demo: Prevent Feedback Loops
- Demo: Outoging Filter Continued
- Prefix Lists
- Demo: Avoid Route Feedback
- Prefix List Configuration
- Demo: Prefix List
- Summary