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

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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