

## **Cisco CCNP 642-901 Optimizing Converged Cisco Networks (ONT)**

- **Course Number:** 642-901
- **Length:** 5 Day(s)

### **Certification Exam**

This course will help you prepare for the following exams:

- **Cisco CCNP Exam 642-901:** Building Scalable Cisco InterNetworks (BSCI)

### **Course Overview**

The Building Scalable Cisco Internetworks (BSCI) course covers topics on Advanced IP Addressing, Routing Principles, Configuring the EIGRP, Configuring the Open Shortest Path First Protocol, Configuring IS-IS, Manipulating Routing Updates, and configuring basic BGP.

### **Prerequisites**

- Cisco CCNA 640-801

### **Audience**

The BSCI course is geared towards IT professionals with an advanced or journeyman knowledge of networks.

### **Course Outline**

- Level 1
- Course Introduction
- 1.1 Introduction
- Module 1
- 2.1 Overview
- 2.2 Demo - Routing Tables
- 2.3 Administrative
- 2.4 Routing Metric
- 2.5 Routing Protocols
- 2.6 Demo - Classful Protocols
- 2.7 Classless Protocols
- 2.8 Distance Vectors & Link-States
- 2.9 Review
- Module 2
- 3.1 Overview
- 3.2 IP Addressing
- 3.3 Subnetting

- 3.4 Hierarchical Addressing
- 3.5 VLSM & Octet Summary
- 3.6 Demo - Octet Summary
- 3.7 Route Summary
- 3.8 IP Unnumbered
- 3.9 Demo - IP Unnumbered
- 3.10 Helper IP Address
- 3.11 Demo - Helper IP Address
- 3.12 Classless Inter-Domain Routing (CIDR)
- 3.13 Demo - Route Summarization
- 3.14 Review
- Level 2
- Module 3
- 1.1 Overview
- 1.2 Advantages
- 1.3 Terminology
- 1.4 Operation
- 1.5 Neighbor
- 1.6 Demo - Neighbor Tables
- 1.7 EIGRP Route Selection
- 1.8 Demo - Configuring EIGRP
- 1.9 Diffusing Update Algorithm
- 1.10 Demo - Configuring EIGRP
- 1.11 Configuring EIGRP
- 1.12 Demo - Configuring EIGRP
- 1.13 Route Summarization
- 1.14 Demo - Disabling Auto Summarization
- 1.15 Manual Summarization
- 1.16 Demo - Manual Summarization
- 1.17 Load Balancing
- 1.18 Demo - Load Balancing
- 1.19 Unequal Load Balancing
- 1.20 Demo - Unequal Load Balancing
- 2.21 EIGRP & WAN Links
- 2.22 Verifying Operation
- 2.23 Demo - Verifying Operations
- 2.24 Review
- Level 3
- Module 4
- 1.1 Overview
- 1.2 Terminology
- 1.3 OSPF Overview
- 1.4 Broadcast Topology
- 1.5 Hello Protocol
- 1.6 Designated Router (DR/BDR)
- 1.7 Demo - DR/BDR

- 1.8 Election Process
- 1.9 OSPF Startup
- 1.10 Demo - OSPF Review
- 1.11 Link State Update (LSU)
- 1.12 Network Types
- 1.13 Operation Modes
- 1.14 OSPF Configuration
- 1.15 Demo - OSPF Configuration
- 1.16 Verifying OSPF Configuration
- 1.17 Demo - Verifying Configuration
- 1.18 Frame relay (NBMA) Configuration
- 1.19 Demo - NBMA Configuration
- 1.20 Review
- Module 5
- 2.1 Overview
- 2.2 OSPF Issues
- 2.3 Router Types
- 2.4 Demo - Router Types
- 2.5 Link-State Advertisements (LSA)
- 2.6 External Path Cost
- 2.7 Types of Areas
- 2.8 Demo - Review of Terms
- 2.9 Virtual Link
- 2.10 Demo - Virtual Link
- 2.11 Multi-Area OSPF Configuration
- 2.12 Demo - Multi-Area OSPF
- 2.13 Review
- Level 4
- Module 6
- 1.1 Overview
- 1.2 OSI Protocols & IS-IS Routing
- 1.3 IS-IS vs OSPF
- 1.4 IS-IS Terminology
- 1.5 OSI Routing Operations
- 1.6 OSI Address Assignment
- 1.7 OSI Network Types
- 1.8 IS-IS Neighbors & Adjacencies
- 1.9 Demo - Neighbor Table
- 1.10 Designated Routers
- 1.11 Subnetwork Independent Functions
- 1.12 IS-IS Configuration
- 1.13 Demo - IS-IS Configuration
- 1.14 Terminology Review
- 1.15 Demo - Basic IS-IS Configuration
- 1.16 Demo - Verifying IS-IS Operation
- 1.17 IS-IS Data Exchange

- 1.18 Demo - IS-IS Data Exchange
- 1.19 Review
- Module 7
- 2.1 Overview
- 2.2 Redistribution
- 2.3 Demo - Route Redistribution
- 2.4 Router Selection
- 2.5 Redistribution Steps
- 2.6 Demo - Redistribution in OSPF
- 2.7 Redistribution in EIGRP
- 2.8 Demo - Redistribution in EIGRP
- 2.9 Defining the Default Metric
- 2.10 Redistribution Review
- 2.11 Routing Update Traffic & Filters
- 2.12 Demo - Routing Filters
- 2.13 Creating Filters
- 2.14 Verifying Routing Operation
- 2.15 Demo - Verifying Routing Operation
- 2.16 Routing Maps
- 2.17 Demo - Route Maps Configuration
- 2.18 Set Commands & Policy based Routing
- 2.19 Demo - Policy Based Routing
- 2.20 Review
- Level 5
- Module 8
- 1.1 Overview
- 1.2 BGP Overview
- 1.3 When to Use BGP?
- 1.4 BGP Terminology
- 1.5 Attributes
- 1.6 Attribute Definitions
- 1.7 BGP Synchronization
- 1.8 Demo - BGP Synchronization
- 1.9 Message Types
- 1.10 BGP Finite States
- 1.11 Route Selection
- 1.12 Multi-Exit Discriminator (MED)
- 1.13 VLSM & Summarization
- 1.14 BGP Configuration
- 1.15 Demo - Basic Configuration
- 1.16 Demo - Synchronization
- 1.17 Demo - Verification
- 1.18 Demo External Neighbors
- 1.19 Review
- Module 9
- 2.1 Overview

- 2.2 Split Horizons
- 2.3 Route Reflector Issues
- 2.4 Route Reflector Configuration
- 2.5 Demo - Route Reflectors
- 2.6 Prefix List
- 2.7 Demo - Prefix List Configuration
- 2.8 Demo - Prefix List Verification
- 2.9 Multihoming
- 2.10 Demo - Multihoming
- 2.11 Redistribution
- 2.12 Review
- Level 6
- Module 10
- 1.1 IGMP
- 1.2 Explain how IP M-Cast Works
- 1.3 IP Multicast Group Membership
- 1.4 Multicast Address
- 1.5 IP Multicast Addresses
- 1.6 IP Multicast Source Distribution Trees
- 1.7 IP Multicast Shared Distribution Trees
- 1.8 RPF Check
- 1.9 Protocol-Independent Multicast Dense Mode
- 1.10 Protocol-Independent Multicast Sparse Mode
- 1.11 IGMP v1 — Packet Format
- 1.12 IGMP v2 — Packet Format
- 1.13 IGMP v3 — Query Message Format
- 1.14 IGMP v3 — Report Message Format
- 1.15 IGMP Snooping
- 1.16 Section 1 Review
- 2.1 Configuring IP Multicast
- 2.2 Enabling IP Multicast
- 2.3 Configuring Auto-RP
- 2.4 Configuring PIM Version 2
- 2.5 PIM Version Interoperability
- 2.6 Verifying and Monitoring IP Multicast
- 2.7 Section 2 Review
- 2.8 Course Closure