

Cisco CCNP Enterprise Advanced Routing and Services (300-410 ENARSI) v1.1

Get ready to deploy, optimize and troubleshoot enterprise networks. Featuring unlimited practice exams and virtual labs, this intermediate course covers how to install, configure and secure Cisco routers and services, and brings you one step closer to earning your CCNP Enterprise certification. Dive into EIGRP, OSPF and BGP, practice MPLS, DMVPN and IPsec VPNs, and build policy-based routing and QoS. Learn how to redistribute routes, use IPv6 and harden devices with AAA, CoPP and first-hop security. Real-world scenarios help you master every domain of the CCNP ENARSI 300-410 exam blueprint and perform advanced network routing with confidence.

[CBT Nuggets course material](#) →

 STUDY PLAN

WEEK 1

Tools for Route Manipulation and Control

- Intro to Tools for Route Manipulation and Control
- Why Route Manipulation is Needed
- Distribute and Prefix lists
- Redistribution Concepts
- Redistribution Lab
- Offset-Lists
- Route Maps
- Route Control Review

Troubleshoot Summarization

- Overview
- Intro to Troubleshooting Summarization
- Summarization Overview
- Auto Summarization
- Manual Summarization for Traditional IPv4 EIGRP
- Manual Summarization for Named IPv4 EIGRP

WEEK 2

Configure and Verify Policy-Based Routing

- Overview
- Introduction to Policy-Based Routing (PBR)
- PBR Overview
- Implementing PBR
- Troubleshooting PBR
- PBR for Locally Generated Traffic

Configure and Verify VRF-Lite

Overview

Introduction to VRF Lite

VRF Lite Overview

VRF Lite for IPv4

VRF Lite with Address Families

VRF Lite and Routing Protocols

Bidirectional Forwarding Detection

Overview

Intro to Bidirectional Forwarding Detection

Overview of Bidirectional Forwarding Detection

Bidirectional Forwarding Detection with OSPF

Bidirectional Forwarding Detection with EIGRP

Bidirectional Forwarding Detection with BGP

Bidirectional Forwarding Detection with Static Routes

EIGRP Address Families

Overview

Introduction to EIGRP Address Families

Overview EIGRP Configuration Options

Configure and Verify EIGRP for IPv4 and IPv6 using Classic Mode

Configure and Verify Named Mode EIGRP

EIGRP Neighbor Relationships and Authentication

Overview

Introduction to EIGRP Relationships and Authentication

Neighborship Overview

Authentication Overview

EIGRP Hands on Lab with Authentication

EIGRP Stub Routing

Overview

Introduction to EIGRP Stub Routing

Going Active in EIGRP

Configure and Verify Stub Routing

EIGRP Stub Routing Hands-on Lab

EIGRP Stub Sites

Troubleshoot EIGRP

Overview

Introduction to the EIGRP Troubleshooting Labs

Base Network Overview

IPv4 and IPv6 Troubleshooting Lab

IPv4 Walkthrough

IPv6 Walk-through

OSPF Address Families

Overview

Introduction to OSPF Address Families

Overview of OSPFv3 and Address Families

OSPFv3 Hands on Lab

Using OSPFv3 Show Commands

Troubleshoot OSPF Authentication for IPv4

Intro to IPv4 OSPF Authentication and Troubleshooting

Overview of OSPF Authentication

WEEK 3

WEEK 4

Implement OSPF Authentication

Virtual Links and Authentication

Troubleshooting OSPF Authentication Lab 01

Troubleshooting OSPF Authentication Lab 02

Troubleshoot OSPF Authentication for IPv6

Overview

Intro to IPv6 OSPF Authentication and Troubleshooting

IPv6 OSPF Authentication Overview

Implement and Verify Authentication

Troubleshooting OSPF Authentication Lab 01

Troubleshooting OSPF Authentication Lab 02

Troubleshoot IPv4 OSPF Network Types

Overview

Intro to Troubleshooting IPv4 OSPF Network Types

IPv4 Network Types Overview

Lab Topology Overview

Troubleshooting Lab 01

Troubleshooting Lab 02

WEEK 5

Troubleshoot IPv6 OSPF Network Types

Overview

Intro to Troubleshooting IPv6 OSPFv3 Network Types

Network Types Overview

Lab Introduction

Troubleshooting Lab 01

Troubleshooting Lab 2

Troubleshoot IPv4 OSPF Areas

Overview

Intro to Troubleshooting IPv4 OSPF Areas

OSPF Area Types Review

Getting Familiar with the Network

IPv4 OSPF Troubleshooting Lab 01

IPv4 OSPF Troubleshooting Lab 02

Troubleshoot IPv6 OSPF Areas

Overview

Intro to Troubleshooting IPv6 OSPF Areas

IPv6 OSPF Area Types

Intro to lab topology

WEEK 6

IPv6 Area Troubleshooting lab 1

IPv6 Area Troubleshooting Lab 2

Troubleshoot IPv4 OSPF Virtual Links

Overview

Introduction to Troubleshooting IPv4 Virtual Links

IPv4 OSPF Virtual Links Overview

Implement a Virtual Link

IPv4 Virtual Link Lab 01

IPv4 Virtual Link Lab 02

Troubleshoot IPv6 OSPF Virtual Links

Overview

Introduction to IPv6 OSPF Virtual Links

IPv6 OSPF Virtual Links Overview

Implement an OSPFv3 Virtual Link

Troubleshoot OSPFv3 Virtual Links Lab 01

Troubleshoot OSPFv3 Virtual Links Lab 02

OSPF Path Preference

Overview

Introduction to OSPF Path Preference

WEEK 7

Network Design to Support Path Preference Testing

Hands-On Lab

Break Through BGP Basics with Address Families

Overview

Beginning with BGP

The Point of BGP

Setting Up BGP

eBGP vs iBGP

Next-Hop Self

The BGP Process

Update-Source Interface

Address Families

Summarizing BGP Basics

Solve BGP Scalability Issues

Overview

Introducing BGP's Scale Issues

The Multi-Hop Scenario

Route Reflectors

Examine Route Reflector Rule 1

Route Reflectors

Examine Route Reflector Rule 2

Route Reflectors

Examine Route Reflectors Rule 3

WEEK 8

Exploring Confederations

Deploy and Trace a Confederation

Summarizing BGP Scaling Solutions

Filter Routes in BGP

Overview

Route Policies in BGP

Address Summarization

Distribute Lists

Prefix Lists

AS ACLs

Route Maps

Summarizing BGP Filtering

Understand the BGP Best Path Algorithm

Overview

Introducing BGP's Decision Making Process

Weight
Local Preference
Originator and AIGP
AS Path
Origin Code and MED
eBGP vs iBGP

WEEK 9

The Remaining Tiebreakers
Summarizing the BGP Best Path Algorithm

Troubleshoot Common BGP Issues

Overview
Troubleshooting BGP
Setting up Scenario 1
Lab 1
Setting Up Scenario 2
Lab 2
Summarize BGP Troubleshooting

Describe MPLS Operations

Overview
Introduction to MPLS Operations
MPLS Overview
Implement and Verify MPLS
Determine MPLS Forwarding

Describe MPLS Layer 3 VPNs

Overview

Introduction to MPLS Layer 3 VPNs
Overview of MPLS Layer 3 VPNs
Techniques used for MPLS L3 VPNs
MPLS Review
VRFs for MPLS L3 VPNs
Routing between PE and CE

WEEK 10

iBGP in the Provider Network
Implement iBGP
VPN and Transit Labels
Hands on Lab MPLS L3 VPNs

Configure and Verify DMVPN Networks

Overview
Introduction to DMVPNs
DMVPN Overview
Topology Introduction
DMVPN Hub and Spoke Commands
DMVPN Hub and Spoke LAB (no IPsec)
DMVPN Hub and Spoke LAB (With IPsec)
DMVPN Phases

Troubleshoot Device Security using IOS AAA

Overview
Intro to Troubleshoot AAA Authentication
AAA Authentication Overview
Troubleshooting Console Access

Troubleshooting VTY Access

WEEK 11

Hands On Lab

Troubleshoot Router Security Features

Overview

Intro to Troubleshooting Router Security Features

Standard IPv4 ACLs for Filtering

Extended IPv4 ACLs for Filtering

Time Based ACLs

IPv6 ACLs for Filtering

Unicast Reverse Path Forwarding (uRPF)

Troubleshoot Control Plane Policing

Overview

Introduction to Troubleshooting Control Plane Policing

CoPP Review

CoPP with Remote Access

CoPP with IPv4 Routing Protocols

CoPP with IPv6

Describe IPv6 First Hop Security Features

Overview

WEEK 12

Introduction to IPv6 First Hop Security Features

IPv6 First Hop Security Overview

IPv6 Snooping

IPv6 RA Guard

IPv6 DHCP Guard

IPv6 Source Guard

Troubleshoot Device Management Protocols

Overview

Intro to Troubleshoot Device Management Protocols

Overview of Management Protocols

File Transfer via TFTP-FTP

File transfer via HTTP(S)

File Transfer via SCP

Troubleshoot SNMP

Overview

Introduction to Troubleshooting SNMP

SNMP Overview

SNMPv2 Configuration

SNMPv3 Client Configuration

SNMPv3 Server Configuration

Troubleshooting SNMP

Troubleshoot Network Problems using Logging

Overview

Introduction to Troubleshooting using Logging

Logging Overview

Configuring Logging

Conditional Debugging

Troubleshoot IPv4 and IPv6 DHCP

Overview

Introduction to Troubleshooting DHCP Services

Overview of DHCP Services

IPv4 DHCP Client and Server

WEEK 13

IPv6 DHCP Client and Server

Troubleshoot Network Performance Issues using IP SLA

Overview

Intro to Troubleshoot Network Performance with IP SLA

SLA Overview

Configure and Verify icmp-echo SLA

Configure and Verify UDP-Jitter SLA

Configure and Verify DHCP SLA

Tracking using SLAs

Troubleshoot NetFlow

Overview

Introduction to Troubleshooting NetFlow

NetFlow Overview

Flavors of NetFlow

NetFlow v5

Flexible NetFlow

NetFlow Collectors and Analyzers

Troubleshoot Enterprise Networks with DNA Center Assurance

Overview

Troubleshooting and SD-Access

Where Assurance Fits In

Troubleshooting Client Health

Troubleshooting Network Health

Summarizing DNA Center Assurance

Fundamentals of EIGRP

Overview

Intro to EIGRP

EIGRP Overview

WEEK 14

EIGRP Vocabulary (The beginning...)

Reported-Advertised BW and Delay Information

Backup Routes Concepts

Feasible Successor (Backup Route) Lab

Unequal Cost Proportional Load Balancing

Passive Interface

Metric Calculation

Summary Routes

EIGRP Review

Configure and Verify Control Plane Policing (CoPP)

Overview

Welcome to CoPP

MQC Overview

Class Maps

Policy Maps

Service Policy for the Control Plane

Troubleshoot EIGRP - v1.1 Updates

Introducing EIGRP Troubleshooting

Lab Introduction

Troubleshoot IPv4 EIGRP

Troubleshoot IPv6 EIGRP

CHALLENGE

Troubleshoot BGP - v1.1 Updates

Introducing Troubleshooting BGP

Explore the Lab and Objective

Lab 1

Lab 2

CHALLENGE

Troubleshoot Networks with Logs and Netflow

Introducing Logs and Netflow for Troubleshooting

Understand Common Logs and Solutions

Configure Logging

Configure Conditional Debugging

Recognize Telemetry Advantages

Understand Netflow

Configure Classic Netflow v9

Flexible Netflow

CHALLENGE

WEEK 15

Troubleshoot Catalyst Center

Introducing Catalyst Center Assurance

Understand Catalyst Center

Explore Client Health in Assurance

Explore Network Device Health in Assurance

CHALLENGE