Implementing Cisco Enterprise Advanced Routing and Services (ENARSI) v1.0

Duration: 5 days
Audience: Professionnel TI

Who is this training for?

- Enterprise Network Engineers
- System Engineers
- System Administrators
- Network Administrators

Training objectives

- Acquire the knowledge to install, configure, operate, and troubleshoot an enterprise network
- Qualify for professional-level positions in preparation for routing and services
- Prepare for the Implementing Cisco Enterprise Advanced Routing and Services (300-410 ENARSI) exam
- Configure the classic Enhanced Interior Gateway Routing Protocol (EIGRP) for IPv4 and IPv6
- Optimize classic EIGRP and named EIGRP for IPv4 and IPv6
- Troubleshoot classic EIGRP and named EIGRP for IPv4 and IPv6
- Configure Open Shortest Path First (OSPF)v2 and OSPFv3 in IPv4 and IPv6 environments
- Optimize OSPFv2 and OSPFv3 behavior
- Troubleshoot OSPFv2 for IPv4 and OSPFv3 for IPv4 and IPv6
- Implement route redistribution using filtering mechanisms
- Troubleshoot redistribution
- Implement path control using policy-based routing (PBR) and IP Service Level Agreement (SLA)
- Configure Multiprotocol-Border Gateway Protocol (MP-BGP) in IPv4 and IPv6 environments
- Optimize MP-BGP in IPv4 and IPv6 environments
- Troubleshoot MP-BGP for IPv4 and IPv6
- Describe the characteristics of Multiprotocol Label Switching (MPLS)

Copyright © 2026 AFI by Edgenda inc.

- Describe the main architectural components of an MPLS VPN
- Identify routing and forwarding features packet data for MPLS VPNs
- Explain how packets are transmitted in an MPLS VPN environment
- Implement Cisco Internetwork (IOS) operating system Dynamic Multipoint VPNs (DMVPNs)
- Implement Dynamic Host Configuration Protocol (DHCP)
- Describe the tools available to secure IPV6 first hop
- Troubleshoot Cisco router security features
- Troubleshoot infrastructure security and services

Summary

This course gives you the knowledge to install, configure, operate, and troubleshoot an enterprise network. This course covers advanced routing and infrastructure technologies, expanding on the topics covered in the Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR) course.

Course outline

EIGRP Implementation

- EIGRP Features
- EIGRP Reliable Transport
- Exploring the EIGRP Operation
- Comparing EIGRP Classic and Named Mode
- Configuring EIGRP Using Classic and Named Mode for IPv4 and IPv6
- Knowledge Exchange on Routing in EIGRP
- Lab: Checking EIGRP Topology Table
- EIGRP Metrics
- Calculating EIGRP Classic Mode Metrics

EIGRP Optimization

-

Copyright © 2026 AFI by Edgenda inc.

EIGRP Queries

- EIGRP Router Stub
- EIGRP Stuck in Active
- EIGRP summary route
- Lab: Configure EIGRP Stud Routing, Summarization, and Default Routing
- EIGRP Load Balancing
- Authentication on EIGRP
- Lab: Configure EIGRP Load Balancing and Authentication

EIGRP Troubleshooting

- EIGRP Neighbor Issues
- Troubleshooting EIGRP Route Table Issues
- Troubleshooting EIGRP Routing Table Issues
- Troubleshooting EIGRP Routing Table Issues EIGRP Stub
- Troubleshooting EIGRP Summarization
- Troubleshooting EIGRP for IPv6
- Troubleshooting Authentication to EIGRP

OSPF Implementation

- OSPF Features
- OSPF Operations
- OSPF Hierarchical Structure
- OSPF Design Limitations
- OSPF Message Types
- Comparing OSPFv2 & OSPFv3
- Lab: Configuring OSPFv3 for IPv4 and IPv6
- OSPFv2 and OSPFv3 LSA Types
- Lab: Check the LInk-State Database

Copyright © 2026 AFI by Edgenda inc.

- Periodic Database Changes
- Exchange and Synchronization of LSDBs
- Synchronization of LSDB on Multiaccess Networks
- Execution of the SPF Algorithm

Optimization of OSPF

- Summarization of the OSPF Route
- Default Routing in OSPF
- OSPF Special Zones
- Lab: Configure Stub Zones and OSPF Summarization
- Cost of Default Routing in Special Zones
- OSPF Authentication
- OSPF Virtual Links

Troubleshooting OSPF

- Lab: Troubleshoot OSPF Problems
- Components of OSPF Troubleshooting
- Troubleshooting OSPF Adjacency
- Troubleshooting OSPF Routing Problems
- Troubleshooting OSPF Path Selection
- Troubleshooting OSPF Special Areas
- Troubleshooting OSPF Summerization

Redistribution Configuration

- Route Redistribution
- Redistributing Route Information
- Determining Default Metrics for Redistributed Routes
- Lab: Implement Redistribution of Routing Protocols
-

Copyright © 2026 AFI by Edgenda inc.

Costing for OSPF E1 and E2 Routes

- Types of Redistribution
- Mutual Redistribution
- Redistribution Manipulation Needs
- Filtering Tools: Distributed Lists
- Filtering Tools: Prefix Lists
- Manipulating Redistribution
- Filtering Tools: Route Maps
- Lab: Manipulating Redistribution Using Route Maps
- Identifying Redistribution Conditions Troubleshooting
- Lab: Troubleshooting Redistribution Issues

Troubleshooting Redistribution

- Troubleshooting Redistribution Issues: Route Feedback

Implementing Path Control

- Path Control Needs
- PBR Features and Benefits
- PBR Configuration Explained
- Lab: Implementing PBR
- Bi-Directional Advanced Detection
- BFD Operational Modes

IBGP Implementation

- BGP Basics
- BGP Neighbor Relationships
- BGP Attributes
- Path BGP
-

Copyright © 2026 AFI by Edgenda inc.

Path BGP Selection

- BGP Transit AS Function
- IBGP Journey Processing
- IBGP Split Horizon
- IBGP Full Mesh
- Lab: IBGP and EBGP

BGP Optimization

- Weight Attribute Configuration
- Lab: Implementing BGP Path Selection
- Configuring the MED Attribute
- Configuring BGP Route Filtering
- Implementing Peer Groups on BGP
- Lab: Configuring BGP Advanced Features
- IBGP Scalability Issues in an AS Transit
- Split-Horizon Rules Route Reflector
- Redundant Route Reflectors
- Lab: Configure BGP Route Reflectors
- Authentication to BGP

MP-BGP Implementation

- MP-BGP Support for IPv6
- BGP Filtering Mechanisms for IPv6
- Lab: Configure MP-BGP for IPv4 & IPv6
- BGP Troubleshooting
- Lab: Troubleshooting BGP Issues
- Controlling BGP
- Troubleshooting BGP Neighbor Relationships

Copyright © 2026 AFI by Edgenda inc.

- BGP Monitoring Overview
- IBGP Troubleshooting
- MP-BGP Troubleshooting

MPLS Exploration

- Description of the Traditional IP Routing
- Description of the Advantages and Benefits of MPLS
- Introduction to MPLS Terminology
- Description of the Components of the MPLS Architecture

Introduction to the MPLS L3 VPN Architecture

- Description of the MPLS L3 VPN Architecture
- Description of the PE Router Architecture
- Description of VRF
- Description of the Methods of Propagating Routing Information through the P-Network
- Description of Route Distinguishers
- Description of RD Operation in the VPN MPLS
- Description of route targets
- Description of RT and RD process flows

Introduction to MPLS L3 VPN routing

- Description of MPLS L3 VPN routing requirements
- Description of media for internet routing
- Description of route tables on PE routers
- Description of end-to-end flow of routing updates
- Description of end-to-end flow VPN packet transmission mechanisms
- Description of Penultimate Hop Popping VPN VPN
- Description of VPN Label Propagation Between PE Routers

Copyright © 2026 AFI by Edgenda inc.

Configuration Virtual Routing and Forwarding (VRF)-Lite

- PE router Routing Contexts
- VPN-Aware Routing Protocols
- VRF Table
- VRF-Lite Functionality
- Migrating from Old to New Style VRF CLI
- Routing with VRF-Lite
- Lab: Configuring Routing with VRF-Lite

DMVPN Implementation

- Cisco IOS DMVPN Overview
- DMVPN Solution Components
- Understanding GRE
- NHRP
- DMVPN Operations
- DMVPN Authentication
- DMVPN Hub Configuration
- DMVPN Spoke Configuration
- DMVPN Routing Configuration
- DMVPN Verification
- Lab: Implementing Cisco IOS DMVPN

DHCP Implementation

- DHCP Overview
- DHCP Relay
- DHCP Manual Address Binding
- DHCP Options Description
- IPv6 Stateless Address Autoconfiguration Overview

Copyright © 2026 AFI by Edgenda inc.

- DHCPv6 Overview
- Operation in DHCPv6
- DHCPv6 Stateless Overview
- DHCP Relay Agent
- Lab: Get IPv6 Addresses Dynamically
- Troubleshooting DHCP
- Troubleshooting IPv6 Address Assignment on Clients
- Lab: Troubleshooting Problems on DHCPV4 and DHCPv6

Introduction to IPv6 First Hop Security

- IPv6 Snooping Description
- IPv6 ND Inspection Description
- IPv6 RA Guard Description
- DHCPv6 Guard Description
- IPv6 Source Guard Description
- IPv6 Destination Guard Description

Securing Cisco Routers

- Interpreting an IPv4 ACL
- Implementing an IPv6 ACL IPv4 ACL for Filtering
- Implementing a Time-Based IPV4 ACL
- Interpreting an IPv6 ACL
- Implementing an IPv6 ACL for Filtering
- Troubleshooting the Access List
- Lab: Troubleshoot IPv4 & IPv6 ACL Issues
- Control Plane Security Description
- COntrol Plane Policy Description
- CoPP Implementation Steps

Copyright © 2026 AFI by Edgenda inc.

- uRPF Configuration Example
- Lab: Configure and Verify uRPF

Troubleshooting Infrastructure Services and Security

- Lab: Troubleshoot Network Management Protocol Issues
- AAA Overview
- Configuring AAA Using Local Databases
- Configuring AAA Using AAA Server
- Troubleshooting AAA
- SNMP
- Troubleshooting SNMP
- Syslog
- Network Management Protocols
- NetFlow
- Cisco Flexible NetFlow

Troubleshooting with DNA Center Assurance

- DNA Assurance Needs
- Cisco AI networks Analytics
- DNA Assurance Health Scores
- Using Path Trace for Troubleshooting
- Case Study: Troubleshooting Using DNA Assurance

Approach and methodology

The training aims to develop skills in installing, configuring, operating and troubleshooting an enterprise network, relying on advanced routing and infrastructure technologies. [afiexpertise.com], [afiexpertise.com] Learning generally revolves around a balance between structured explanations (concepts, design, best practices) and guided practice, as the objective is explicitly operational (configuration/optimization/troubleshooting). [afiexpertise.com], [afiexpertise.com] ENARSI training is

Copyright © 2026 AFI by Edgenda inc.

recognized as an "instructor-led / supervised course + lab practice" format in the Cisco ecosystem (5-day course with hands-on lab practice). The activities are oriented towards concrete use cases around the major themes of the course (e.g. EIGRP, OSPFv2/OSPFv3, redistribution, PBR/IP SLA, MP-BGP, MPLS VPN, DMVPN, DHCP, security and infrastructure services), in order to strengthen the ability to diagnose and resolve problems.

Prerequisites

- Have a general understanding of the basics of networking, a basic knowledge of LAN implementation, a general understanding of network device management, a general understanding of how to secure network devices, a basic knowledge of network automation.
- This Cisco course is recommended to help you meet these prerequisites:Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR) or equivalent content

Recommendations

- A general understanding of network fundamentals.
- Basic knowledge of LAN implementation.
- A general understanding of network equipment management (e.g., configuration, monitoring, troubleshooting).
- A general understanding of the principles for securing network equipment.
- Network automation basics. [afiexpertise.com] Ideally, have completed (or mastered the equivalent) of ENCOR content, as ENARSI delves deeper into the topics covered in Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR).

Certifications

This course prepares you for the Implementing Cisco Enterprise Advanced Routing and Services (300-410 ENARSI) exam, which leads to the new CCNP Enterprise and Cisco Certified Specialist - Enterprise Advanced Infrastructure Implementation certifications.

Accreditations

Copyright © 2026 AFI by Edgenda inc.

Cisco Certified Network Professional Enterprise (CCNP)

Copyright © 2026 AFI by Edgenda inc.