THINQTANK® LEARNING

CISCO CERTIFIED NETWORK PROFESSIONAL ENTERPRISE

Implementing and Operating Enterprise Network Core Technologies (ENCOR)
Implementing Cisco Enterprise Advanced Routing and Services (ENARSI)

Our Learning Exclusive

- Custom exam prep software and materials
- Exam delivery in classroom with 98% success
- Course specific thinQtank® Learning publications to promote fun exciting learning
- Extended hours of training including immersive hands-on exercises
- WE DO NOT "TEACH THE TEST" We always deliver valuable hands-on experience
- Receive all reading material and study guides when you register
- All courses taught by CCIE expert instructors

Course Duration

- Nine days of instructor-led learning
- Five days ENCORE and four days ENARSI
- 70% lecture, 30% hands-on labs

Prerequisites

- Implementation of Enterprise LAN networks
- Basic understanding of routing and wireless connectivity
- Basic Internet usage skills
- Basic understanding of python scripting

Target Audience

- Those looking to earn their CCNP Certification
- Those looking to earn their CCNP Specialist
- Engineers involved in the installation and support of enterprise network architectures
- Those who configure, verify, and troubleshoot enterprise network architectures
- Network engineers, administrators, technicians

Exam Information

- 350-401 – Implementing and Operating Cisco Enterprise Network Core Technologies v1.0
- 300-410 – Implementing Cisco Enterprise Advanced Routing and Services v1.0

Delivery Methods

- Instructor-Led Training
- Immersive Live-Online Training
- On-Site and Custom Delivery

Exclusive Tools and Learning Package

- Comprehensive video training package
- Virtual builds of all labs and hand-on learning objectives so learners can continue their hands on experience after the completion of the course
- Industry unique training course to achieve multiple certifications in one training camp

Course Overview

thinQtank® Learning is offering a unique nine-day training camp comprised of five days of instructor-led learning for Implementing and Operating Enterprise Network Core Technologies (ENCOR) and four days of instructor-led learning for Implementing Cisco Enterprise Advanced Routing and Services (ENARSI). As with all of our Cisco Training Experiences – exams are delivered in the classroom.

ENCOR

The goal of this portion of the course is to develop the core networking skills needed to configure, troubleshoot, and manage Enterprise wired and wireless networks. It also requires learners understand and implement security principles within the Enterprise networks and introduces learners to overlay network design by using solutions like SD—Access and SD—WAN. The course also lays focus implementing on automation and programmability in enterprise networks.

ENARSI

This portion of the course provides CCNP-level network administrators, network support, and help desk technicians with the knowledge and skills needed to install, configure, operate, and troubleshoot a dual stack enterprise network. It provides a deep dive into advanced routing and infrastructure technologies; an expansion of the topics covered in the Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR) course.

Course Objectives ENCOR

Upon completing this portion of the course, learners will be able to meet these objectives:

- Illustrate the hierarchical network design model and architecture using the access, distribution, and core layers
- Compare and contrast the various hardware and software switching mechanisms and operation, while defining the TCAM and CAM, along with process switching, fast switching, and Cisco Express Forwarding concepts
- Troubleshoot layer 2 connectivity using VLANs, trunking
- Implementation of redundant switched networks using spanning tree protocol
- Troubleshooting link aggregation using EtherChannel
- Describe the features, metrics, and path selection concepts of EIGRP
- Implementation and optimization of OSPFv2 and OSPFV3, including adjacencies, packet types, and areas, summarization and route filtering for IPv4 and IPv6

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Course Objectives ENCOR Continued

- Implementing EBGP interdomain routing, path selection and single and dual-homed networking
- Implementing network redundancy using protocols like HSRP and VRRP
- Implementing internet connectivity within Enterprise using static and dynamic NAT
- Describe the virtualization technology of servers, switches, and the various network devices and components
- Implementing overlay technologies like VRF, GRE, VPN and LISP
- Describe the components and concepts of wireless networking including RF, antenna characteristics, and define the specific wireless standards
- Describe the various wireless deployment models available, include autonomous AP deployments and cloud—based designs within the centralized Cisco WLC architecture
- Describe wireless roaming and location services
- Describe how APs communicate with WLCs to obtain software, configurations, and centralized management
- Configure and verify EAP, WebAuth, and PSK wireless client authentication on a WLC
- Troubleshoot wireless client connectivity issues using various tools available
- Troubleshooting Enterprise networks using services like NTP, SNMP , Cisco IOS IP SLAs, NetFlow and Cisco IOS Embedded Event Manager
- Explain the use of available network analysis and troubleshooting tools, which include show and debug commands, as well as best practices in Troubleshooting
- Configure secure administrative access for Cisco IOS devices using the CLI access, RBAC, ACL, and SSH, and explore device hardening concepts to secure devices from less secure applications, such as Telnet and HTTP
- Implement scalable administration using AAA and the local database, while exploring the features and benefits
- Describe the enterprise network security architecture, including the purpose and function of VPNs, content security, logging, endpoint security, personal firewalls, and other security features
- Explain the purpose, function, features, and workflow of Cisco DNA Center Assurance for Intent Based Networking, for network visibility, proactive monitoring, and application experience
- Describe the components and features of the Cisco SD-Access solution, including the nodes, fabric control plane, and data plane, while illustrating the purpose and function of the VXLAN gateways
- Define the components and features of Cisco SD-WAN solution, including the orchestration plane, management plane, control plane, and data plane
- Describe the concepts, purpose, and features of multicast protocols, including IGMP v2/v3, PIM dense mode/sparse mode, and rendezvous points
- Describe the concepts and features of QoS and describe the need within the enterprise network
- Explain basic Python components and conditionals with script writing and analysis
- Describe network programmability protocols like NETCONF, RESTCONF
- Describe APIs in Cisco DNA Center and vManage

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Course Objectives ENARSI

Upon completing this portion of the course, learners will be able to meet these objectives:

- Configure, optimize, and troubleshoot EIGRP
- Configure, optimize, and troubleshoot OSPFv2 and OSPFv3
- Implement and troubleshoot route redistribution using filtering mechanisms
- Implement path control using PBR and IP SLA
- Configure, optimize, and troubleshoot BGP
- Implement MP—BGP
- Describe the features of MPLS
- Describe the major architectural components of an MPLS VPN
- Identify the routing and packet forwarding functionalities for MPLS VPNs
- Explain how packets are forwarded in an MPLS VPN environment
- Implement Cisco IOS DMVPNs
- Implement and troubleshoot DHCP
- Describe the tools available to secure the IPv6 first hop
- Troubleshoot Cisco router security features
- Troubleshoot infrastructure security and services
- Troubleshoot network issues with Cisco DNA Center Assurance

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ENCOR Course Modules

1

- Examining Cisco Enterprise Network Architecture
- Understanding Cisco Switching Paths
- Implementing Campus LAN Connectivity
- Building Redundant Switched Topology
- Implementing Layer 2 Port Aggregation

2

- Understanding EIGRP
- Implementing OSPF
- Optimizing OSPF

3

- Exploring EBGP
- Implementing Network Redundancy
- Implementing NAT
- Introducing Virtualization Protocols and Techniques
- Understanding Virtual Private Networks and Interfaces

4

- Understanding Wireless Principles
- Examining Wireless Deployment Options
- Understanding Wireless Roaming and Location Services
- Examining Wireless AP Operation
- Understanding Wireless Client Authentication
- Troubleshooting Wireless Client Connectivity

5

- Implementing Network Services
- Using Network Analysis Tools
- Implementing Infrastructure Security
- Implementing Secure Access Control

SELF

- Introducing Multicast Protocols
- Introducing QoS
- Understanding Enterprise Network Security Architecture
- Exploring Automation and Assurance Using Cisco DNA Center
- Examining the Cisco SD—Access Solution
- Understanding the Working Principles of the Cisco SD-WAN Solution
- Understanding the Basics of Python Programming
- Introducing Network Programmability Protocols
- Introducing APIs in Cisco DNA Center and vManage

ENCOR Labs and Demonstrations

- Discovery 1: Investigate the CAM
- Discovery 2: Analyze Cisco Express Forwarding
- Discovery 3: Troubleshoot VLAN and Trunk Issues
- Discovery 4: Tuning STP and Configuring RSTP
- Discovery 5: Configure Multiple—Spanning Tree Protocol
- Discovery 6: Troubleshoot EtherChannel
- Discovery 7: Implement Multiarea OSPF
- Discovery8: Implement OSPF Tuning
- Discovery 9: Apply OSPF Optimization
- Discovery 10: Implement OSPFv3
- Discovery 11: Configure and Verify Single-Homed EBGP
- Discovery 12: Implementing HSRP
- Discovery 13: Configure VRRP
- Discovery 14: Implement NAT
- Discovery 15: Configure and Verify VRF
- Discovery 16: Configure and Verify a GRE Tunnel
- Discovery 17: Configure Static VTI Point—to—Point Tunnels
- Discovery 18: Configure Wireless Client Authentication in a Centralized Deployment
- Discovery 19: Troubleshoot Wireless Client Connectivity Issues
- Discovery 20: Configure Syslog
- Discovery 21: Configure and Verify Flexible NetFlow
- Discovery 22: Configuring Cisco IOS Embedded Event Manager
- Discovery 23: Troubleshoot Connectivity and Analyze Traffic with Ping, Traceroute, and Debug
- Discovery 24: Configure and Verify Cisco IP SLAs
- Discovery 25: Configure Standard and Extended ACLs
- Discovery 26: Configure Control Plane Policing
- Discovery 27: Implement Local and Server-Based AAA
- Discovery 28: Writing and Troubleshooting Python Scripts
- Discovery 29: Explore JSON Objects and Scripts in Pym
- Discovery 30: Use NETCONF Via SSH
- Discovery 31: Use RESTCONF with Cisco IOS XE Software

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ENARSI Course Modules

1

- Implementing EIGRP
- Optimizing EIGRP
- Troubleshooting EIGRP

2

- Implementing OSPF
- Optimizing OSPF
- Troubleshooting OSPF
- Configuring Redistribution
- Troubleshooting Redistribution

3

- Implementing Path Control
- Implementing IBGP
- Optimizing IBGP
- Implementing MP-BGP
- Troubleshooting BGP

4

- Configuring VRF-Lite
- Implementing DMVPN
- Implementing DHCP
- Securing Cisco Routers
- Troubleshooting Infrastructure Security and Services

SELF

- Exploring MPLS
- Introducing MPLS L3 VPN Architecture
- Introducing MPLS L3 VPN Routing
- Introducing IPv6 First Hop Security
- Troubleshooting with DNA Center Assurance
- Topics on troubleshooting EIGRP, OSPF, BGP, and Redistribution
- Topics on CoPP
- Topics on troubleshooting infrastructure security and services

ENARSI Labs and Demonstrations

- Discovery 1: Configure EIGRP Using Classic Mode and Named Mode for IPv4 and IPv6
- Discovery 2: Verify the EIGRP Topology Table
- Discovery 3: Configure EIGRP Stub Routing, Summarization, and Default Routing
- Discovery 4: Configure EIGRP Load Balancing and Authentication
- Discovery 5: Troubleshoot EIGRP Issues
- Discovery 6: Configure OSPFV3 for IPv4 and IPv6
- Discovery 7: Verify the Link—State Database
- Discovery 8: Configure OSPF Stub Areas and Summarization
- Discovery 9: Configure OSPF Authentication
- Discovery 10: Troubleshoot OSPF Issues
- Discovery 11: Implement Routing Protocol Redistribution
- Discovery 12: Manipulate Redistribution
- Discovery 13: Manipulate Redistribution Using Route Mag
- Discovery 14: Troubleshoot Redistribution Issues
- Discovery 15: Implement PBR
- Discovery 16: Configure IBGP and EBGP
- Discovery 17: Implement BGP Path Selection
- Discovery 18: Configure BGP Advanced Features
- Discovery 19: Configure BGP Route Reflectors
- Discovery 20: Configure MP-BGP for IPv4 and IPv6
- Discovery 21: Troubleshoot BGP Issues
- Discovery 22: Configure Routing with VRF-Lite
- Discovery 23: Implement Cisco IOS DMVPN
- Discovery 24: Obtain IPv6 Addresses Dynamically
- Discovery 25: Troubleshoot DHCPv4 and DHCPv6 Issues
- Discovery 26: Troubleshoot IPv4 and IPv6 ACL Issues
- Discovery 27: Configure and Verify uRPF
- Discovery 28: Troubleshoot Network Management Protocol Issues: Lab 1
- Discovery 29: Troubleshoot Network Management Protocol Issues: Lab 2

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