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Learning Style: On Demand

Technology: Cisco

Difficulty: Intermediate

Course Duration: 16 Hours

Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR 350-401)



About this Course:

The Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR) v1.0 course gives you the knowledge and skills needed to configure, troubleshoot, and manage enterprise wired and wireless networks. You'll also learn to implement security principles within an enterprise network and how to overlay network design by using solutions such as SD-Access and SD-WAN. Course

content includes 3 days of self-study material.

This course helps you prepare to take the 350-401 Implementing Cisco® Enterprise Network Core Technologies (ENCOR) exam, which is part of four new certifications:

- CCNP® Enterprise
- CCIE® Enterprise Infrastructure
- CCIE Enterprise Wireless
- Cisco Certified Specialist – Enterprise Core

Course Benefits:

- Configure, troubleshoot, and manage enterprise wired and wireless networks
- Implement security principles within an enterprise network
- Prepare you prepare to take the 350-401 Implementing Cisco Enterprise Network Core Technologies (ENCOR) exam

Certifications

This course is part of the following Certifications:

- Cisco Certified Network Professional Enterprise (CCNP)

Course 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 Ternary Content Addressable Memory (TCAM) and Content Addressable Memory (CAM), along with process switching, fast switching, and Cisco Express Forwarding concepts
- Troubleshoot Layer 2 connectivity using VLANs and trunking
- Implementation of redundant switched networks using Spanning Tree Protocol
- Troubleshooting link aggregation using Etherchannel
- Describe the features, metrics, and path selection concepts of Enhanced Interior Gateway Routing Protocol (EIGRP)
- Implementation and optimization of Open Shortest Path First (OSPF)v2 and OSPFv3, including adjacencies, packet types, and areas, summarization, and route filtering for IPv4 and IPv6
- Implementing External Border Gateway Protocol (EBGP) interdomain routing, path selection, and single and dual-homed networking
- Implementing network redundancy using protocols including Hot Standby Routing Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)
- Implementing internet connectivity within Enterprise using static and dynamic Network Address Translation (NAT)
- Describe the virtualization technology of servers, switches, and the various network devices and components
- Implementing overlay technologies such as Virtual Routing and Forwarding

(VRF), Generic Routing Encapsulation (GRE), VPN, and Location Identifier Separation Protocol (LISP)
- Describe the components and concepts of wireless networking including Radio Frequency (RF) and antenna characteristics, and define the specific wireless standards
- Describe the various wireless deployment models available, include autonomous Access Point (AP) deployments and cloud-based designs within the centralized Cisco Wireless LAN Controller (WLC) architecture
- Describe wireless roaming and location services
- Describe how APs communicate with WLCs to obtain software, configurations, and centralized management
- Configure and verify Extensible Authentication Protocol (EAP), WebAuth, and Pre-shared Key (PSK) wireless client authentication on a WLC
- Troubleshoot wireless client connectivity issues using various available tools
- Troubleshooting Enterprise networks using services such as Network Time Protocol (NTP), Simple Network Management Protocol (SNMP), Cisco Internetwork Operating System (Cisco IOS®) IP Service Level Agreements (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 Command-Line Interface (CLI) access, Role-Based Access Control (RBAC), Access Control List (ACL), and Secure Shell (SSH), and explore device hardening concepts to secure devices from less secure applications, such as Telnet and HTTP
- Implement scalable administration using Authentication, Authorization, and Accounting (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 Virtual Extensible LAN (VXLAN) gateways
- Define the components and features of Cisco SD-WAN solutions, including the orchestration plane, management plane, control plane, and data plane
- Describe the concepts, purpose, and features of multicast protocols, including Internet Group Management Protocol (IGMP) v2/v3, Protocol-Independent Multicast (PIM) dense mode/sparse mode, and rendezvous points
- Describe the concepts and features of Quality of Service (QoS), and describe the need within the enterprise network
- Explain basic Python components and conditionals with script writing and analysis
- Describe network programmability protocols such as Network Configuration Protocol (NETCONF) and RESTCONF

- Describe APIs in Cisco DNA Center and vManage

Audience:

- Mid-level network engineers
- Network administrators
- Network support technicians
- Help desk technicians

Prerequisites:

- Implementation of Enterprise LAN networks
- Basic understanding of Enterprise routing and wireless connectivity
- Basic understanding of Python scripting

Course Outline:

This course includes:

- Chapter 1: Examining Cisco Enterprise Network Architecture
- Chapter 2: Understanding Cisco Switching Paths
- Chapter 3: Implementing Campus LAN Connectivity
- Chapter 4: Building Redundant Switched Topology
- Chapter 5: Implementing Layer 2 Port Aggregation
- Chapter 6: Understanding EIGRP
- Chapter 7: Implementing OSPF
- Chapter 8: Optimizing OSPF
- Chapter 9: Exploring EBGP
- Chapter 10: Implementing Network Redundancy
- Chapter 11: Implementing NAT
- Chapter 12: Introducing Virtualization Protocols and Techniques
- Chapter 13: Understanding Virtual Private Networks and Interfaces
- Chapter 14: Understanding Wireless Principles
- Chapter 15: Examining Wireless Deployment Options
- Chapter 16: Understanding Wireless Roaming and Location Services
- Chapter 17: Examining Wireless AP Operation
- Chapter 18: Understanding Wireless Client Authentication
- Chapter 19: Troubleshooting Wireless Client Connectivity
- Chapter 20: Introducing Multicast Protocols
- Chapter 21: Introducing QoS
- Chapter 22: Implementing Network Services
- Chapter 23: Using Network Analysis Tools
- Chapter 24: Implementing Infrastructure Security
- Chapter 25: Implementing Secure Access Control
- Chapter 26: Understanding Enterprise Network Security Architecture
- Chapter 27: Exploring Automation and Assurance Using Cisco DNA Center
- Chapter 28: Examining the Cisco SD-Access Solution
- Chapter 29: Understanding the Working Principles of the Cisco SD-WAN Solution

- Chapter 30: Understanding the Basics of Python Programming
- Chapter 31: Introducing Network Programmability Protocols
- Chapter 32: Introducing APIs in Cisco DNA Center and vManage

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