CS-ENCOR

CCNP Enterprise Core 350-401

DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	TRAINING CREDITS
5 Days	Professional	Cisco	Instructor Led	N/A

INTRODUCTION

This new five-day Cisco CCNP and CCIE Enterprise Core ENCOR 350-401 course will provide delegates with the knowledge needed to configure, troubleshoot and manage enterprise wired and wireless networks. In addition, the course will cover security principles and the implementation thereof in an enterprise network, as well as using solutions such as SD-Access and SD-WAN to overlay a network design.

AUDIENCE PROFILE

This course is primarily intended for:

- Network support technicians, Network Administrators, Mid-level engineers
- Individuals preparing for the ENCOR #350-401 exam

PREREQUISITES

The knowledge and skills that a learner must have before attending this course are as follows:

- CCNA

COURSE OBJECTIVES

On completion of this course, participants should be familiar with:

Forwarding:

- Concepts related to how network traffic is forwarded through a router or switch architecture.
- Layer:
- How switches prevent forwarding loops while allowing for redundant links with the use of Spanning Tree Protocol (STP) and Rapid Spanning Tree Protocol (RSTP).
- Multiple Spanning Tree (MST) protocol.
- Features such as VTP, DTP, and EtherChannel for switch-to-switch connectivity.

Routing:

- The logic of the programming of the Routing Information Base (RIB). Also, the differences between common routing protocols and common concepts related to static routes.
- The underlying mechanics of the EIGRP routing protocol, the path metric calculations, the failure detection mechanisms and techniques for optimizing the operations of the routing protocol.
- The core concepts of OSPF and the basics in establishing neighborships and exchanging routes with other OSPF routers.
- The route advertisement within a multi-area OSPF domain, path selection, and techniques to optimize an OSPF environment.
- How the OSPF protocol has changed to accommodate support of IPv6.
- The core concepts of BGP and its path attributes.
- The advanced features and concepts of BGP, such as BGP multihoming, route filtering, BGP communities, and the logic for identifying the best path for a specific network prefix.
- Concepts related to multicast and how it operates. Also, the protocols that are required to understand its operation in more detail, such as Internet Group Messaging Protocol (IGMP), IGMP snooping, Protocol Independent Multicast (PIM) Dense Mode/Sparse Mode, and rendezvous points (RPs).

Services:

- The different QoS models available, such as: best effort, Integrated Services (IntServ), and Differentiated Services (DiffServ). Also, the tools and mechanisms used to implement QoS such as classification and marking, policing and shaping, and congestion management and avoidance.
- Functions to enhance the network, such as: time synchronization, virtual gateway technologies, and network address translation.

Overlay:

- Generic Routing Encapsulation (GRE) and IP Security (IPsec) fundamentals and how to configure them. Also, Locator ID/Separation Protocol (LISP) and Virtual Extensible Local Area Network (VXLAN).

Wireless:

- Radio frequency (RF) signals, measuring and comparing the power of RF signals, and basic methods and standards involved in carrying data wirelessly.
- Autonomous, cloud-based, centralized, embedded, and Mobility Express wireless architectures. In addition, the process that lightweight APs must go through to discover and bind to a wireless LAN controller.
- Client mobility from the AP and controller perspectives in order to design and configure a wireless network properly as it grows over time. Also, how components of a wireless network can be used to compute the physical locations of wireless devices.
- Several methods that can be used to authenticate users and devices in order to secure a wireless network.
- Problems wireless clients may have with their connections, developing a troubleshooting strategy, and using a wireless LAN controller as a troubleshooting tool.

Architecture:

- Enterprise campus architectures that can be used to scale from a small environment to a large campus-size network.
- The benefits of Software-Defined Access (SD-Access) over traditional campus networks as well as the components and features of the Cisco SD-Access solution, including the nodes, fabric control plane, and data plane. In addition, the benefits of Software-Defined WAN (SD-WAN) over traditional WANs, as well as the components and features of the Cisco SD-WAN solution, including the orchestration plane, management plane, control plane, and data plane.
- Some of the tools most commonly used for operations and troubleshooting in the network environment. Also, the basics of Cisco DNA Center with Assurance to showcase how the tool can improve mean time to innocence (MTTI) and root cause analysis of issues.

Security:

- A Cisco security framework to protect networks from evolving cybersecurity threats as well as the security components that are part of the framework, such as next-generation firewalls, web security, email security, and much more. Also, network access control (NAC) technologies such as 802.1x, Web Authentication (WebAuth), MAC Authentication Bypass (MAB), TrustSec, and MACsec.
- How to configure and verify network device access control through local authentication and authorization as well through AAA. Also, how to configure and verify router security features, such as access control lists (ACLs), control plane policing (CoPP) and zone-based firewalls (ZBFWs) that are used to provide device and infrastructure security.

SDN:

- Server virtualization technologies such as virtual machines, containers, and virtual switching. Also, the network functions virtualization (NFV) architecture and Cisco's enterprise NFV solution.
- Current network management methods and tools as well as key network programmability methods. In addition, how to use software application programming interfaces (APIs) and common data formats.
- Some of the most common automation tools that are available, such as: on-box, agent-based, and agentless tools.
- Set of tools and a study plan to help you complete your preparation for the CCNP Enterprise ENCOR 350-401 exam.

COURSE CONTENT

Lesson 1: Packet Forwarding
- Network Device Communication
- Forwarding Architectures

Lesson 2: Spanning Tree Protocol
- Spanning Tree Protocol Fundamentals
- Rapid Spanning Tree Protocol

Lesson 3: Advanced STP Tuning
- STP Topology Tuning
- Additional STP Protection Mechanisms

Lesson 4: Multiple Spanning Tree Protocol
- MSTIs, Configuration, Verification & Tuning

Lesson 5: VLAN Trunks and EtherChannel Bundles
- VLAN Trunking Protocol
- Dynamic Trunking Protocol
- EtherChannel Bundle

Lesson 6: Routing
- IP Routing Essentials
- EIGRP
- OSPF
- Advanced OSPF
- OSPFv3
- BGP
- Advanced BGP
- Multicast

Lesson 7: Services
- The Need for QoS
- QoS Models
- Classification and Marking
- Policing and Shaping
- Congestion Management and Avoidance

Lesson 8: IP Services
- Foundation Topics
- First-Hop Redundancy Protocol
- Network Address Translation

Lesson 9: IP Access Control Lists
- Introduction to TCP/IP Transport and Applications
- Basic IPv4 Access Control Lists
- Advanced IPv4 Access Control Lists

Lesson 10: Overlay
- Generic Routing Encapsulation (GRE) Tunnels
- IPsec Fundamentals
- Cisco Location/ID Separation Protocol (LISP)
- Virtual Extensible Local Area Network (VXLAN)

Lesson 11: Wireless
- Wireless Signals and Modulation
- Wireless Infrastructure
- Understanding Wireless Roaming and Location Services
- Authenticating Wireless Clients
- Troubleshooting Wireless Connectivity

Lesson 12: Architecture
- Enterprise Network Architecture
- Fabric Technologies
- Network Assurance

Lesson 13: Security
- Secure Network Access Control
- Network Device Access Control and Infrastructure Security

Lesson 14: SDN
- Virtualization
- Foundational Network Programmability Concepts
- Introduction to Automation Tool

ASSOCIATED CERTIFICATIONS & EXAM

Exam #350-401 is associated with the new CCNP Enterprise, CCIE Enterprise Infrastructure, CCIE Enterprise Wireless and Cisco Certified Specialist – Enterprise Core certifications.

The exam will test a candidate's knowledge and skills related to implementing core enterprise network technologies, such as: Infrastructure, Dual stack (IPv4 and IPv6) architecture, Virtualization, Automation, Network assurance and Security.