COURSE OUTLINE

CS-ENARSI

CCNP ENTERPRISE ADVANCED ROUTING ENARSI 300-410

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

INTRODUCTION

This new five-day Cisco CCNP Enterprise Advanced Routing ENARSI 300-410 course will provide delegates with the knowledge needed to install, configure, operate, and troubleshoot an enterprise network.

AUDIENCE PROFILE

This course is primarily intended for:

- System Administrators , Network Administrators, Enterprise network engineers, System engineers
- Individuals preparing for the Implementing Cisco Enterprise Advanced Routing and Services (300-410 ENARSI) 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:

- IPv4 and IPv6 addressing, DHCP, and routing, as well as details about how to troubleshoot these topics
- The underlying mechanics of the EIGRP routing protocol, the path metric calculations, and how to configure EIGRP
- A variety of advanced concepts, such as failure detection, network summarization, router filtering, and techniques to optimize WAN sites
- How to troubleshoot EIGRP neighbour adjacency issues as well as EIGRP route issues
- How EIGRP advertises IPv6 networks and guides you through configuring, verifying, and troubleshooting EIGRPv6
- The core concepts of OSPF, the exchange of routes, OSPF network types, failure detection, and OSPF authentication
- The OSPF database and how it builds the topology. Also, OSPF path selection, router summarization, and techniques to optimize an OSPF environment
- How to troubleshooting OSPFv2 neighbour adjacency issues as well as route issues
- How the OSPF protocol has changed to accommodate support of the IPv6 protocol
- Troubleshooting issues that may arise with OSPFv3
- The core concepts of BGP, its path attributes, and configuration for IPv4 and IPv6 network prefixes
- BGP communities and configuration techniques for routers with lots of BGP peerings
- BGP path selection process, how BGP identifies the best BGP path, and methods for load balancing across equal paths
- Identifying and troubleshooting issues relating to BGP neighbour adjacencies, BGP routes, and BGP path selection. As well as MP-BGP (BGP for IPv6).
- Route maps, concepts for selecting a network prefix, and how packets can be conditionally forwarded out different interfaces for certain network traffic
- The rules of redistribution, configuration for route redistribution, and behaviours of redistribution based on the source or destination routing protocol
- How to troubleshoot issues related to redistribution, including configuration issues, suboptimal routing issues, and routing loop issues
- How to configure and verify VRF and introduces you to MPLS operations and MPLS Layer 3 VPNs
- GRE tunnels, NHRP, DMVPN, and techniques to optimize a DMVPN deployment

- The importance of securing network traffic on the WAN and techniques for deploying IPsec tunnel protection for DMVPN tunnels
- How to troubleshoot issues related to IPv4 and IPv6 access control lists and prefix lists
- How to troubleshoot AAA issues, uRPF issues, and CoPP issues. Also, it introduces various IPv6 First-Hop Security features
- How to troubleshoot issues that you might experience with local or remote access, remote transfers, syslog, SNMP, IP SLA, Object Tracking, NetFlow, and Flexible NetFlow. Also, the troubleshooting options available with Cisco DNA Center Assurance
- Tips and strategies for studying for the ENARSI 300-410 exam

COURSE CONTENT

Lesson 1: IPv4/IPv6 Addressing and Routing Review
- IPv4 Addressing
- DHCP for IPv4
- IPv6 Addressing
- IPv6 SLAAC, Stateful DHCPv6, and Stateless DHCPv6 SLAAC
- Packet Forwarding Process
- Routing Information Sources
- Static Routes
- Trouble Tickets

Lesson 2: EIGRP
- EIGRP Fundamentals
- EIGRP Configuration Modes
- Path Metric Calculation

Lesson 3: Advanced EIGRP
- Failure Detection and Timers
- Route Summarization
- WAN Consideration
- Route Manipulation

Lesson 4: Troubleshooting EIGRP for IPv4
- Troubleshooting EIGRP for IPv4 Neighbour Adjacencies
- Troubleshooting EIGRP for IPv4 Routes
- Troubleshooting Miscellaneous EIGRP for IPv4 Issues
- EIGRP for IPv4 Trouble Tickets

Lesson 5: EIGRPv6
- EIGRPv6 Fundamentals
- Troubleshooting EIGRPv6 Neighbour Issues
- Troubleshooting EIGRPv6 Routes
- Troubleshooting Named EIGRP
- EIGRPv6 and Named EIGRP Trouble Tickets

Lesson 6: OSPF
- OSPF Fundamentals
- OSPF Configuration
- Designated Router and Backup Designated Router
- OSPF Network Types
- Failure Detection
- Authentication

Lesson 7: Advanced OSPF
- Link-State Advertisements
- OSPF Strubby Areas
- OSPF Path Selection
- Summarization of Routes
- Discontiguous Network
- Virtual Links

Lesson 8: Troubleshooting OSPFv2
- Troubleshooting OSPFv2 Neighbour Adjacencies
- Troubleshooting OSPFv2 Routes
- Troubleshooting Miscellaneous OSPFv2 Issues
- OSPFv2 Trouble Tickets

Lesson 9: OSPFv3
- Fundamentals
- OSPFv3 Configuration
- OSPFv3 LSA Flooding Scope
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Lesson 10: Troubleshooting OSPFv3
- OSPFv3 for IPv6
- Trouble Tickets
- Address Families
- AF Trouble Ticket

Lesson 11: BGP
- Fundamentals
- Basic Configuration
- Session types and behaviours
- Multiprotocol BGP for IPv6

Lesson 12: Advanced BGP
- Route Summarization
- Route filtering and manipulation
- Communities
- Maximum Prefix
- Configuration Scalability

Lesson 13: BGP Path Selection
- Understanding Path selection
- BGP Best Path
- BGP Equal Cost Multipath

Lesson 14: Troubleshooting BGP
- Neighbour Adjacencies
- BGP Routes
- BGP Path Selection
- BGP Trouble Tickets
- MP-BGP Trouble Ticket

Lesson 15: Route Maps and Conditional Forwarding
- Conditional Matching
- Route Maps
- Conditional Forwarding of Packets
- Trouble Tickets

Lesson 16: Route Redistribution
- Overview
- Protocol Specific Configuration

Lesson 17: Troubleshooting Redistribution
- Advanced Redistribution Issues
- IPv4 and IPv6 Redistribution
- Redistribution Trouble Tickets

Lesson 18: VRF. MPLS and MPLS Layer 3 VPNs
- Implementing and Verifying VRf-Lite
- Introduction to MPLS Operations
- Introduction to MPLS Layer 3 VPNs

Lesson 19: DMVPN Tunnels
- Generic Routing Encapsulation (GRE) Tunnels
- Next Hop Resolution Protocol (NHRP)
- Dynamic Multipoint VPN (DMVPN)
- DMVPN Configuration
- Spoke-to-Spoke Communication
- Problems with Overlay Networks
- DMVPN Failure Detection and High Availability
- IPv6 DMVPN Configuration

Lesson 20: Securing DMVPN Tunnels
- Elements of secure Transport
- IPSEC Fundamentals
- IPsec Tunnel Protection

Lesson 21: Troubleshooting ACLs and Prefix Lists
- Troubleshooting IPv4 ACLs
- Troubleshooting IPv6 ACLs
- Troubleshooting Prefix Lists
- Trouble Tickets

Lesson 22: Infrastructure Security
- Cisco IOS AAA Troubleshooting

– Troubleshooting Unicast Reverse Path Forwarding (uRPF)	– Troubleshooting Control Plane Policing – IPv6 First Hop Security	**Lesson 23: Device Management and Management Tools Troubleshooting**

ASSOCIATED CERTIFICATIONS & EXAM

Exam #300-410 is associated with the new CCNP Enterprise certification.

This exam will test a candidate's knowledge of implementation and troubleshooting for advanced routing technologies and services.