

CCNP Enterprise

CCNP - Cisco Certified Network professional. Software and Networking grow more and more interconnected every day, Intent-based networking connects users, devices, apps, security intent, and policy to capitalize on these opportunities, today's IT professionals need a broad range of core skills so CCNP is the advanced level certification program from Cisco. This is meant for professionals who want to gain a deeper understanding of networking technologies with an emphasis on planning and implementing to configure, troubleshoot, and manage enterprise wired and wireless networks. You'll also learn to implement security principles within an enterprise network. We offer the CCNP as Two Specialized Courses Implementing Cisco Enterprise Network Core Technologies (ENCOR) & Implementing Cisco Enterprise Advanced Routing and Services (ENARSI). The CCNP Enterprise program is taught by senior network engineers in a world class environment with state of the art labs and infrastructure.

Course Outline

☞ **CCNP Enterprise:**

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



**CCNP
Enterprise**

Course Curriculum

Introduction to Router and Routing Protocols

- Static Routing, Dynamic Routing, Default Routing
- IP Addressing, Summarization (Auto and Manual)

Enhanced Interior Gateway Routing Protocol

- EIGRP Features, EIGRP Update Process
- Configuration and Verification of EIGRP Tables
- EQUAL and UNEQUAL Metric Route Load Sharing
- Summarization, EIGRP Metric Tuning
- Manipulating Hello and Hold Timer, Static Neighbor configuration
- Static Neighbor configuration
- Passive Interfaces, Authentication
- Neighbor ship over WAN, EIGRP Stub features
- Default Route with EIGRP
- Route Filtering by using ACL, IP Prefix-list and Route-Map

Open Shortest Path First

- OSPF Link State Features, Packet Types
- OSPF Neighbors and Adjacencies on LAN and WAN
- LSA TYPES, OSPF Metric Calculation and Tuning
- OSPF Network Types (Point-to-Point, BMA, NBMA)
- OSPF Configuration and Verification, Route Filtering
- Route Summarization, Default Route in OSPF
- Special Areas (Stub, Totally Stubby, NSSA, Totally NSSA)
- OSPF Virtual Link with Authentication / No Authentication
- Manipulating Hello and Dead Intervals

Route Redistribution

- Redistribution Concepts and Process
- Redistributing into EIGRP / OSPF / RIP

Advance Redistribution

- PBR function and configuration
- Redistribution with Route-Map / Distribute-list
- Issues with Multiple Redistribution Points
- IP Service Level Agreement

Border Gateway Protocol

- Basics of Internet Routing and Addressing
- Internet Route Aggregation, BGP ASNs (Public and Private ASNs)
- BGP ASNs (Public and Private ASNs)
- Single Homed, Dual Homed
- Single Multi homed, Dual Multi homed
- Internal BGP: Next-hop Issue with IBGP
- Split-Horizon, IBGP Mesh

- Clearing BGP Peers (Inbound and Outbound Filtering)
- IBGP Neighbors with Loopback Address
- External BGP: EBGP Neighbors with Loopback Address
- BGP Update Messages and BGP States
- Effect of Auto Summarization in BGP
- BGP Path Attributes: Weight, Local Preference, As-path Pre-pend
- Origin Codes, Multi Exit Discriminator
 - BGP Route Filtering and BGP PATH Selection Process

IP Version 6 Addressing

- IPV6 Address Representation, Types of IPV6 Addresses
- Global Route Aggregation, Static IPV6 Address Configuration
- Stateful DHCP, Stateless Auto Configuration
- Multicast and other Special IPV6 Addresses, DAD
- IPV6 Routing Protocols and IGP Redistribution
- IPV4 and IPV6 Co-existence: Dual Stack / Tunneling / NAT-PT
- Static Point-to-Point IPV6 Tunneling
- Dynamic Multipoint IPV6 Tunnel:
 - Auto and Manual 6 to 4 Tunnel, ISATAP Tunnel

Routing over Branch Internet Connection

- Broadband Internet Access
- DSL Concepts, DSL types, PPPoE / PPPoA
- Virtual Private Network:
 - Site-to-Site VPN
 - IPSEC Tunnel, GRE Tunnel

Enterprise Campus Network Design

- Hierarchical Network Design
- Multi-Layer Switch Operation, Types of Multi-Layer Switch
- Switching Tables: CAM / TCAM
- Switch Port Cables and Connectors
- Switch Port Configuration: Port Speed & Port Duplex Mode
- VLAN and TRUNKS: VLAN Membership and Deployment
- Trunk Encapsulation (ISL/Dot1q), DTP
- VLAN Trunking Protocol: VTP Domain / Modes / Advertisement
- VTP Version and VTP Pruning

Aggregating Switch Link

- Switch Port Aggregating with Ether Channel
- Ether Channel Load Balancing
- Ether Channel Negotiation Protocol (PAgP, LACP)

Spanning Tree Protocol

- STP Concept, BPDU (CBPDU, TCN BPDU)

- STP States, STP Timers
- Types of STP: CST/PVST /PVST+
- STP Root Bridge Placement and Configuration
- STP Customization, Modifying STP Timers
- PORTFAST / UPLINKFAST / BACKBONEFAST
- Protecting STP: ROOTGUARD/ BPDUGUARD/ LOOPGUARD/UDLD

Layer 3 High Availability

- HSRP / VRRP / GLBP
- Supervisor and Route Processor Redundancy
- Configuring Redundancy Modes & Supervisor Synchronization
- Non Stop Forwarding

Securing Switched Network

- Port Security / 802.1x Authentication, Port Based Authentication
- Mitigating Spoofing Attacks, DHCP Snooping, IP Source Guard
- Dynamic ARP Inspection, VLAN ACL, Securing VLAN Trunk,
- VLAN Hopping, Private-VLAN Concept
- Introduction to Network Maintenance
- Introduction to Troubleshooting Process
- Maintenance & Troubleshooting
- Basic & Adv. Cisco Catalyst Switch Troubleshooting
- Introduction to Troubleshooting Routing Protocols
- Security Troubleshooting
- IP Services Troubleshooting
- IP Communications Troubleshooting

Wireless LAN

- WLAN Basics and WLAN Standards
- WLAN Architecture and Functions
- Light Weight Access Point Operation
- 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
- Exploring Automation and Assurance Using Cisco DNA Centres
- Understanding the Working Principles of the Cisco SD-WAN Solution
- Understanding the Basics of Python Programming
- Introducing Network Programmability Protocols
- Basic Knowledge of network automation