CCNP Enterprise/ R & S Training Curriculum

STRUCTURE

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CCNP Enterprise/ R & S Training Curriculum

"Join comprehensive CCNP Enterprise Training Program to give new heights to your career."

About Croma Campus:

Croma Campus Training & Development Private Limited is an education platform since 2010 providing rigorous industry-relevant programs designed and delivered in collaboration with world-class faculty and industry.

- Hands-On Live Projects
- Simulation Test Papers
- Industry Cases Studies
- 61,640+ Satisfied Learners
- 140+ Training Courses
- 100% Certification Passing Rate
- Live Instructor Classroom / Online Training
- 100% Placement Assistance

Course Objectives:

- Get in-depth idea of network core technologies and advanced routing and switching.
- Prepare yourself for the CCNP Enterprise Certification Exam
- Be a network professional and get hired by top MNCs
- Learn to install, operate, configure and troubleshoot routers and switches
- Get trained by CISCO certified routing and switching experts

Course Description:

Prove your skills with Enterprise networking solutions.

Achieving CCNP Enterprise certification proves your skills with enterprise networking solutions. To earn CCNP Enterprise certification, you pass two exams: one that covers core enterprise technologies and one enterprise concentration exam of your choice, so you can customize your certification to your technical area of focus.

The core exam focuses on your knowledge of enterprise infrastructure including dual-stack (IPv4 and IPv6) architecture, virtualization, infrastructure, network assurance, security, and automation. The core exam is also the qualifying exam for CCIE Enterprise Infrastructure and CCIE Enterprise Wireless certifications. Passing the core exam will qualify candidates to schedule and take the CCIE lab within the validity of their core exam.

Concentration exams focus on emerging and industry-specific topics such as network design, SD-WAN, wireless, and automation. You can prepare for concentration exams by taking corresponding Cisco training courses.

CCNP Enterprise Certification Details:

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

Certification Structure:

Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR 350-401) is a 120-minute exam that focuses on your knowledge of enterprise infrastructure technologies and how to implement them.

- Infrastructure (30%)
- Security (20%)
- Architecture - Dual Stack IPv4 and IPv6 (15%)
- Automation (15%)
- Virtualization (10%)
- Network Assurance (10%)

Concentration exam: 300-410 ENARSI: Implementing Cisco Enterprise Advanced Routing and Services (ENARSI)

Certification Structure:

- Layer 3 Technologies (30%)
- VPN technologies (20%)
- Infrastructure Security (30%)
- Infrastructure Services (25%)

Croma Campus Training Program Deliverables:

- **Session Recordings** - Original Class Room Voice & Video Recording
- **Training Material** - Soft Copy Handbooks
- **Assignments** | Multiple Hands-on Exercises
- **Test Papers** - We provide **Practice Test** as part of our course to help you prepare for the actual certification exam.
- **Live Case Studies**
- **Live Projects** - Hands-on exercises and Project work. You will work on real time industry-oriented projects and assignments for each module to practice.
- **Key focus on Hands-on exercises and Project work**. You will work on real time industry-oriented projects.
- Faculty with more than **10+ Years of Experience** in the Industry.
- **Technical Resume Designing & Job Assistance:** With more than 100+ Clients across the Globe and we help learners to get a good job in their respective field. We also help learners with resume preparation.
- **Interview Q&A**
- **About Croma Campus Training Certificate:** Croma Campus will provide you with an industry-recognized (Certified by **ISO 9001:2015** & **E-Cell IIT Jodhpur**) course completion certificate which has lifelong validity.
- **How I Unlock my Croma Campus Certificate:** Attend Complete Batch & Submit at least One Completed Project.

Training Curriculum:

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

Module 1: Architecture

- Explain the different design principles used in an enterprise network
  - Enterprise network design such as Tier 2, Tier 3, and Fabric Capacity planning
  - High availability techniques such as redundancy, FHRP, and SSO
- Analyze design principles of a WLAN deployment
  - Wireless deployment models (centralized, distributed, controller-less, controller based, cloud, remote branch)
  - Location services in a WLAN design
- Differentiate between on-premises and cloud infrastructure deployments
- Explain the working principles of the Cisco SD-WAN solution
  - SD-WAN control and data planes elements
  - Traditional WAN and SD-WAN solutions
- Explain the working principles of the Cisco SD-Access solution
  - SD-Access control and data planes elements
  - Traditional campus interoperating with SD-Access
- Describe concepts of wired and wireless QoS
  - QoS components
  - QoS policy
- Differentiate hardware and software switching mechanisms
  - Process and CEF
  - MAC address table and TCAM
  - FIB vs. RIB

Module 2: Virtualization

- Describe device virtualization technologies
  - Hypervisor type 1 and 2
  - Virtual machine
  - Virtual switching
- Configure and verify data path virtualization technologies
  - VRF
  - GRE and IPsec tunnelling
- Describe network virtualization concepts
  - LISP
  - VXLAN

Module 3: Infrastructure

- Layer 2
  - Troubleshoot static and dynamic 802.1q trunking protocols
  - Troubleshoot static and dynamic Ether Channels
  - Configure and verify common Spanning Tree Protocols (RSTP and MST)

- Layer 3
  - Compare routing concepts of EIGRP and OSPF (advanced distance vector vs. linked state, load balancing, path selection, path operations, metrics)
  - Configure and verify simple OSPF environments, including multiple normal areas, summarization, and filtering (Neighbor adjacency, point-to-point and broadcast network types, and passive interface)
  - Configure and verify eBGP between directly connected neighbours (best path selection algorithm and Neighbor relationships)
- Wireless
  - Describe Layer 1 concepts, such as RF power, RSSI, SNR, interference noise, band and channels, and wireless client devices capabilities
  - Describe AP modes and antenna types
  - Describe access point discovery and join process (discovery algorithms, WLC selection process)
  - Describe the main principles and use cases for Layer 2 and Layer 3 roaming
  - Troubleshoot WLAN configuration and wireless client connectivity issues
- IP Services
  - Describe Network Time Protocol (NTP)
  - Configure and verify NAT/PAT
  - Configure first hop redundancy protocols, such as HSRP and VRRP
  - Describe multicast protocols, such as PIM and IGMP v2/v3

Module 4: Network Assurance

- Diagnose network problems using tools such as debugs, conditional debugs, trace route, ping, SNMP, and syslog
- Configure and verify device monitoring using syslog for remote logging 2019 Cisco Systems, Inc. This document is Cisco Public. Page 3
- Configure and verify NetFlow and Flexible NetFlow
- Configure and verify SPAN/RSPAN/ERSPAN
- Configure and verify IPSLA
- Describe Cisco DNA Center workflows to apply network configuration, monitoring, and management
- Configure and verify NETCONF and RESTCONF

Module 5: Security

- Configure and verify device access control
  - Lines and password protection
  - Authentication and authorization using AAA
- Configure and verify infrastructure security features
  - ACLs
  - CoPP
- Describe REST API security
- Configure and verify wireless security features
  - EAP
  - WebAuth
  - PSK

- Describe the components of network security design
    - Threat defence
    - Endpoint security
    - Next-generation firewall
    - Trust Sec, MAC sec
    - Network access control with 802.1X, MAB, and Web Auth

Module 6: Automation

- Interpret basic Python components and scripts
- Construct valid JSON encoded file
- Describe the high-level principles and benefits of a data modeling language, such as YANG
- Describe APIs for Cisco DNA Center and vManage
- Interpret REST API response codes and results in payload using Cisco DNA Center and RESTCONF
- Construct EEM applet to automate configuration, troubleshooting, or data collection
- Compare agent vs. agentless orchestration tools, such as Chef, Puppet, Ansible, and SaltStack

Concentration Exam: 300-410 ENARSI: Implementing Cisco Enterprise Advanced Routing and Services (ENARSI)

Module 1: Layer 3 Technologies

- Troubleshoot administrative distance (all routing protocols)
- Troubleshoot route map for any routing protocol (attributes, tagging, filtering)
- Troubleshoot loop prevention mechanisms (filtering, tagging, split horizon, route
- poisoning)
- Troubleshoot redistribution between any routing protocols or routing sources
- Troubleshoot manual and auto-summarization with any routing protocol
- Configure and verify policy-based routing
- Configure and verify VRF-Lite
- Describe Bidirectional Forwarding Detection
- Troubleshoot EIGRP (classic and named mode)
    - Address families (IPv4, IPv6)
    - Neighbour relationship and authentication
    - Loop-free path selections (RD, FD, FC, successor, feasible successor, stuck in
    - active)
    - Stubs
    - Load balancing (equal and unequal cost)
    - Metrics
- Troubleshoot OSPF (v2/v3)
    - Address families (IPv4, IPv6)
    - Neighbour relationship and authentication
    - Network types, area types, and router types

- Point-to-point, multipoint, broadcast, non-broadcast
- Area type: backbone, normal, transit, stub, NSSA, totally stub
- Internal router, backbone router, ABR, ASBR
- Virtual link
- Path preference

- Troubleshoot BGP (Internal and External)
- Address families (IPv4, IPv6)
  - Neighbor relationship and authentication (next-hop, mulithop, 4-byte AS, private
  - AS, route refresh, synchronization, operation, peer group, states and timers)
  - Path preference (attributes and best-path)
  - Route reflector (excluding multiple route reflectors, confederations, dynamic
  - peer)
  - Policies (inbound/outbound filtering, path manipulation)

Module 2: VPN Technologies

- Describe MPLS operations (LSR, LDP, label switching, LSP)
- Describe MPLS Layer 3 VPN
- Configure and verify DMVPN (single hub)
  - GRE/mGRE
  - NHRP
  - IPsec
  - Dynamic Neighbor
  - Spoke-to-spoke

Module 3: Infrastructure Security

- Troubleshoot device security using IOS AAA (TACACS+, RADIUS, local database)
- Troubleshoot router security features
  - IPv4 access control lists (standard, extended, time-based)
  - IPv6 traffic filter
  - Unicast reverse path forwarding (uRPF)
- Troubleshoot control plane policing (CoPP) (Telnet, SSH, HTTP(S), SNMP, EIGRP, OSPF, BGP)
- Describe IPv6 First Hop security features (RA guard, DHCP guard, binding table, ND inspection/snooping, source guard)

Module 4: Infrastructure Services

- Troubleshoot Device Management
  - Console and VTY
  - Telnet, HTTP, HTTPS, SSH, SCP
  - (T)FTP
- Troubleshoot SNMP (v2c, v3)
- Troubleshoot network problems using logging (local, syslog, debugs, conditional debugs, timestamps)
- Troubleshoot IPv4 and IPv6 DHCP (DHCP client, IOS DHCP server, DHCP relay, DHCP options)

- Troubleshoot network performance issues using IP SLA (jitter, tracking objects, delay, connectivity)
- Troubleshoot NetFlow (v5, v9, flexible NetFlow) Troubleshoot network problems using Cisco DNA Center assurance (connectivity, monitoring, device health, network health)