



# CORE NETWORKING FOR ENTERPRISE

## CCNP® Enterprise Certification Program

Software and networking become more and more interconnected every day. Technology advances are enabling new applications and businesses that connect everything—people, devices, machines, and applications. And with intent-based networking, organizations can take advantage of automation to scale and secure their networking infrastructure. To capitalize on these opportunities, today's networking professionals need a broader range of skills and deeper focus in strategic technology areas. The CCNP Enterprise certification program gives you exactly that breadth and depth.

We designed the CCNP Enterprise certification to help you prove your skills in the ever-changing landscape of enterprise network technologies. The certification covers core technologies and an enterprise focus area of your choice. You choose where you want to focus. You choose where to take your career.

Among the industry's most widely recognized and respected certifications, CCNP sets you apart. It tells the world you know what you are doing. In addition, completing any CCNP certification

exam earns you a Cisco® Specialist certification, so you get recognized for your accomplishments along the way.

## Training Course Titles:

- **Implementing and Administering Cisco Solutions (CCNA 200-301) v1.0:**
  - Introduction to Networks (ITN)
  - Switch, Routing and Wireless Essentials (SRWE)
  - Enterprise Networking and Security Automation (ENSA)
- **Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR 350-401) v1.0**
- **Implementing Cisco Enterprise Advanced Routing and Services (ENARSI 300-410) v1.0**

## Estimated Time to Completion:

- 26 weeks (6 months)

## Technology areas:

- Enterprise Networking, Routing and switching

## **Course Outline (Implementing and Administering Cisco Solutions (CCNA 200-301))**

- Exploring the Functions of Networking
- Introducing the Host-to-Host Communications Model
- Operating Cisco IOS Software
- Introducing LANs
- Exploring the TCP/IP Link Layer
- Starting a Switch
- Introducing the TCP/IP Internet Layer, IPv4 Addressing, and Subnets Explaining the
- TCP/IP Transport Layer and Application Layer Exploring the Functions of Routing
- Configuring a Cisco Router
- Exploring the Packet Delivery Process
- Troubleshooting a Simple Network
- Introducing Basic IPv6
- Configuring Static Routing

- Implementing VLANs and Trunks
- Routing Between VLANs
- Introducing OSPF
- Building Redundant Switched Topologies
- Improving Redundant Switched Topologies with EtherChannel Exploring Layer Redundancy
- Introducing WAN Technologies
- Explaining Basics of ACL
- Enabling Internet Connectivity
- Introducing QoS
- Explaining Wireless Fundamentals
- Introducing Architectures and Virtualization
- Explaining the Evolution of Intelligent Networks
- Introducing System Monitoring
- Managing Cisco Devices
- Examining the Security Threat Landscape
- Implementing Threat Defence Technologies
- Securing Administrative Access
- Implementing Device Hardening

### **LAB Outline: Implementing and Administering Cisco Solutions (CCNA 200-301):**

- Get Started with Cisco Command-Line Interface (CLI)
- Observe How a Switch Operates
- Perform Basic Switch Configuration
- Implement the Initial Switch Configuration
- Inspect TCP/IP Applications
- Configure an Interface on a Cisco Router
- Configure and Verify Layer 2 Discovery Protocols
- Implement an Initial Router Configuration
- Configure Default Gateway
- Explore Packet Forwarding

- Troubleshoot Switch Media and Port Issues
- Troubleshoot Port Duplex Issues
- Configure Basic IPv6 Connectivity
- Configure and Verify IPv4 Static Routes
- Configure IPv6 Static Routes
- Implement IPv4 Static Routing
- Implement IPv6 Static Routing
- Configure VLAN and Trunk
- Troubleshoot VLANs and Trunk
- Configure a Router on a Stick
- Implement Multiple VLANs and Basic Routing Between the VLANs
- Configure and Verify Single-Area OSPF
- Configure and Verify EtherChannel
- Improve Redundant Switched Topologies with EtherChannel
- Configure and Verify IPv4 ACLs
- Implement Numbered and Named IPv4 ACLs
- Configure a Provider-Assigned IPv4 Address
- Configure Static NAT
- Configure Dynamic NAT and Port Address Translation (PAT)
- Implement PAT
- Log into the WLC
- Monitor the WLC
- Configure a Dynamic (VLAN) Interface
- Configure a DHCP Scope
- Configure a WLAN
- Define a Remote Access Dial-In User Service (RADIUS) Server
- Explore Management Options
- Explore the Cisco DNATM Center
- Configure and Verify NTP
- Configure System Message Logging

- Create the Cisco IOS Image Backup
- Upgrade Cisco IOS Image
- Configure WLAN Using Wi-Fi Protected Access 2 (WPA2) Pre-Shared Key (PSK) Using the GUI
- Secure Console and Remote Access
- Enable and Limit Remote Access Connectivity
- Secure Device Administrative Access
- Configure and Verify Port Security
- Implement Device Hardening

### **Course Outline: Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR 350-401):**

- Examining Cisco Enterprise Network Architecture
- Understanding Cisco Switching Paths
- Implementing Campus LAN Connectivity
- Building Redundant Switched Topology
- Implementing Layer 2 Port Aggregation
- Understanding EIGRP
- Implementing OSPF
- Optimizing OSPF
- Exploring EBGp
- Implementing Network Redundancy
- Implementing NAT
- Introducing Virtualization Protocols and Techniques
- Understanding Virtual Private Networks and Interfaces
- 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
- Introducing Multicast Protocols

- Introducing QoS
- Implementing Network Services
- Using Network Analysis Tools
- Implementing Infrastructure Security
- Implementing Secure Access Control
- Understanding Enterprise Network Security Architecture
- Exploring Automation and Assurance Using Cisco DNA Center
- Examining the Cisco SD-Access Solution
- Understanding the Working Principles of the Cisco SD-WAN Solution
- Understanding the Basics of Python Programming
- Introducing Network Programmability Protocols
- Introducing APIs in Cisco DNA Center and vManage

### **Lab Outline: Implementing and Operating Cisco Enterprise Network Core Technologies (ENCOR 350-401):**

- Investigate the CAM
- Analyze Cisco Express Forwarding
- Troubleshoot VLAN and Trunk Issues
- Tuning Spanning Tree Protocol (STP) and Configuring Rapid Spanning Tree Protocol (RSTP)
- Configure Multiple Spanning Tree Protocol
- Troubleshoot EtherChannel
- Implement Multi-area OSPF
- Implement OSPF Tuning
- Apply OSPF Optimization
- Implement OSPFv3
- Configure and Verify Single-Homed EBGP
- Implementing Hot Standby Routing Protocol (HSRP)
- Configure Virtual Router Redundancy Protocol (VRRP)
- Implement NAT
- Configure and Verify Virtual Routing and Forwarding (VRF)
- Configure and Verify a Generic Routing Encapsulation (GRE) Tunnel

- Configure Static Virtual Tunnel Interface (VTI) Point-to-Point Tunnels
- Configure Wireless Client Authentication in a Centralized Deployment
- Troubleshoot Wireless Client Connectivity Issues
- Configure Syslog
- Configure and Verify Flexible NetFlow
- Configuring Cisco IOS Embedded Event Manager (EEM)
- Troubleshoot Connectivity and Analyze Traffic with Ping, Traceroute, and Debug
- Configure and Verify Cisco IP SLAs
- Configure Standard and Extended ACLs
- Configure Control Plane Policing
- Implement Local and Server-Based AAA
- Writing and Troubleshooting Python Scripts
- Explore JavaScript Object Notation (JSON) Objects and Scripts in Python  
Use NETCONF Via SSH
- Use RESTCONF with Cisco IOS XE Software

### **Course Outline: Implementing Cisco Enterprise Advanced Routing and Services (ENARSI 300-410):**

- Implementing EIGRP
- Optimizing EIGRP
- Troubleshooting EIGRP
- Implementing OSPF
- Optimizing OSPF
- Troubleshooting OSPF
- Implementing Internal Border Gateway Protocol (iBGP)
- Optimizing BGP
- Implementing MP-BGP
- Troubleshooting BGP
- Configuring Redistribution
- Troubleshooting Redistribution
- Implementing Path Control
- Exploring MPLS

- Introducing MPLS L3 VPN Architecture
- Introducing MPLS L3 VPN Routing
- Configuring Virtual Routing and Forwarding (VRF)-Lite
- Implementing DMVPN
- Implementing DHCP
- Troubleshooting DHCP
- Introducing IPv6 First Hop Security
- Securing Cisco Routers
- Troubleshooting Infrastructure Security and Services

## **Lab Outline: Implementing Cisco Enterprise Advanced Routing and Services (ENARSI) v1.0:**

- Configure EIGRP
- Using Classic Mode and Named Mode for IPv4 and IPv6
- Verify the EIGRP Topology Table
- Configure EIGRP Stub Routing, Summarization, and Default Routing
- Configure EIGRP Load Balancing and Authentication
- Troubleshoot EIGRP Issues
- Configure OSPFv3 for IPv4 and IPv6
- Verify the Link-State Database
- Configure OSPF Stub Areas and Summarization
- Configure OSPF Authentication
- Troubleshoot OSPF
- Implement Routing Protocol Redistribution
- Manipulate Redistribution Using Route Maps
- Troubleshoot Redistribution Issues Implement PBR
- Configure IBGP and External Border Gateway Protocol (EBGP)
- Implement BGP Path Selection
- Configure BGP Advanced Features
- Configure BGP Route Reflectors
- Configure MP-BGP for IPv4 and IPv6
- Troubleshoot BGP Issues



- Implement PBR
- Configure Routing with VRF-Lite
- Implement Cisco IOS DMVPN
- Obtain IPv6 Addresses Dynamically
- Troubleshoot DHCPv4 and DHCPv6 Issues
- Troubleshoot IPv4 and IPv6 Access Control List (ACL) Issues
- Configure and Verify Control Plane Policing
- Configure and Verify Unicast Reverse Path Forwarding (uRPF)
- Troubleshoot Network Management Protocol Issues

## About the Instructor:

ALIYU Azeez Omotayo

PRINCIPAL CONSULTANT/CEO (SEC-CONCEPTS NETWORKS LTD)

With over 18 years of experience in networking and security, including Cisco networks, Linux, and Windows Server environments, which includes the planning, designing, implementation, troubleshooting of large IP networks and vast experience on Routing, Switching, Security, Service provider, Wireless, Multicast and Quality of Service, VoIP (Voice over IP) / IPT (IP Telephony), Operating Systems and Protocols worldwide, including in Nigeria, South Africa, France and the United States. He holds degrees in Mathematics and Information Networks, and System Security all from the USA. He is a member of Computer Society of Nigeria (CPN), and an Accredited Management Trainer (CMD). He currently holds more than 150 International IT certifications but not limited to: CCIE R&S, MCSE: Server Administration, CompTIA Network+ and Security+ etc.

He had trained over 15 CCIEs, many CCNPs and a lot students in both Networking and Security.