

# € TRAINING

CCDE Network Design



29 December 2024 -  
9 January 2025  
Sharm El-Sheikh (Egypt)



# CCDE Network Design

REF: B1617 DATE: 29 December 2024 - 9 January 2025 Venue: Sharm El-Sheikh (Egypt) - Fee: 6965 Euro

## Introduction:

This course teaches participants all information they need about Network Design. It is aimed at Network Engineers /Solution Architects responsible for building Networks that meet business objectives. The principles are Vendor Neutral and can be applied in any IP Network.

## Course Objectives:

At the end of this course the participants will be able to:

- Understanding L2 technologies design
- Discussing IGP, BGP, MPLS, QOS, IPv6, and multicast designs
- Performing Practical Lab Scenarios

## Targeted Audience:

- System Engineers
- Network managers
- Individuals who are interested in learning Networking concepts

## Course Outlines:

### Unit 1:

- L2 Technologies Design
- Spanning Tree Design
- First Hop Redundancy Protocols Design
- HSRP , VRRP , GLBP
- Layer 2 looped and Layer 3 Routed Access Design
- PB , PBB, SPB, PBB-TE in the Service Provider Access Design
- IGP Design
- OSPF

### Unit 2:

- OSPF Theory, OSPF Design Best Practices, OSPF Fast Convergence, Scalability.
- Multi-Area OSPF Design, Fast Reroute with OSPF
- Overlay technologies and OSPF GRE, mGRE, DMVPN, LISP
- OSPF in the Datacenter, Enterprise and Service Provider Networks
- ISIS
- IS-IS Theory, IS-IS Design Best Practices, IS-IS Fast Convergence, Scalability.
- Multi-Level IS-IS Design, Fast Reroute with IS-IS
- Overlay Technologies and IS-IS GRE, mGRE, DMVPN, LISP.
- IS-IS in the Datacenter, Enterprise and Service Provider Networks

### Unit 3:

- BGP Design
- BGP Theory, IBGP, EBGP, Principles of Hot and Cold Potato Routing.
- IBGP Route Reflectors and EBGP Route Servers Design. Optimal RR Placement
- BGP and IGP Interaction, BGP and MPLS Interaction

### Unit 4:

- BGP Policies and their Global Effect
- BGP Fast Re-route, BGP PIC Prefix Independent Convergence, BGP Control Plane Convergence
- BGP Scalability

### Unit 5:

- MPLS Design
- Tunnels, Pseudowires, Encapsulation, LSP, LSP Hierarchy, Unidirectional, and Bidirectional LSPs, Point to Point and Point to Multipoint LSPs.
- Layer 2 MPLS VPNs
- Layer 3 MPLS VPN
- Inter-AS MPLS Layer 2 and Layer 3 VPNs

### Unit 6:

- Carrier Supporting Carrier MPLS VPNS
- Seamless and Unified MPLS Architecture
- MPLS Transport Profile
- MPLS Traffic Engineering

### Unit 7:

- QoS Design
- QoS Theory, Intserv and Diffserv Architecture, Weakness, and Strengths of QoS
- QoS on the Internet
- Campus QoS Design
- Service Provider QoS Design

### Unit 8:

- IPv6
- IPv6 Drivers Business/Technical
- IPv6 Theory review
- IPv6 Migration Approaches Compare in SPs vs Enterprise

### Unit 9:

- Multicast



- Multicast Theory, PIM SM, PIM SSM, and PIM BiDIR
- Multicast Design in Enterprise Networks vs Service Provider Networks

#### Unit 10:

- High Availability in Multicast Networks
- CCDE PracEcal Lab Scenarios