

CCDE Network Design Training



Course Schedule

This Course teaches you Network Design and is aimed for 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.

- 5 days Training
- Each day 8 hours
- May 1 to 5 from 9am to 5pm
- Attendees will get Orhan Ergun's CCDE In-Depth book
- They will be provided Self Paced Course, they will be able to study the resources after the training
- They will be able to attend Orhan Ergun's Online CCDE Training (Webex Based) for free

High Level Course Content

- L2 Technologies Design
- IGP Design
- BGP Design
- MPLS Design
- QOS Design
- IPv6 Design
- Multicast Design
- CCDE Practical Lab Scenarios

L2 Technologies Design

-In this module you will how layer 2 technologies used in the Local Area Network , Datacenter and Service Provider networks and how they affect overall network 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

-In this module you will learn how to design IGP Routing Protocols in the both Enterprise and Service provider networks. How to choose the best IGP depending on various factors e.g Size of Network , Physical topologies , Traffic engineering requirements etc . You will be equipped to know the Pros and Cons of each protocol.

- ❑ General Routing Theory
- ❑ Redistribution , Link State vs Distance Vector Protocols
- ❑ EIGRP
 - ❑ EIGRP Theory , EIGRP Design Best Practices, EIGRP Fast Convergence, EIGRP Scalability , EIGRP Scalability and Fast ReRoute.
 - ❑ Overlay Technologies and EIGRP (GRE , mGRE , DMVPN and LISP)

IGP Design

-OSPF

- 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

BGP Design

-BGP

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

MPLS Design

-MPLS

- Tunnels, Pseudowires, Encapsulation, LSP, LSP Hierarchy, Unidirectional and Bidirectional LSPs, Point to Point and Point to Multipoint LSPs.
- Layer 2 MPLS VPNs
 - VPWS (EoMPLS), VPLS, VPMS
 - Layer 2 MPLS VPN Scalability
 - Layer 2 MPLS VPN Convergence
- Layer 3 MPLS VPN
 - L3 VPN Theory, OSPF PE-CE, IS-IS PE-CE , EIGRP PE-CE , BGP PE-CE
 - Multicast over MPLS Layer 3 VPN
 - QOS over MPLS Layer 3 VPN (Mapping Enterprise QOS to SP QOS and Vice-Versa
 - L3 vs L2 MPLS VPNS
- Inter-AS MPLS Layer 2 and Layer 3 VPNs
 - Option A, B , C
- Carrier Supporting Carrier MPLS VPNS
- Seamless and Unified MPLS Architecture
- MPLS Transport Profile

MPLS Design

MPLS Traffic Engineering

- Traffic Engineering Principles, Admission Control, RSVP, Traffic Engineering without MPLS Explicit Path Routing aka Source Routing
- MPLS Fast Reroute
- MPLS , IP and Segment Routing Fast Reroute

QOS Design

□ QOS

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

IPv6 Design

□ IPv6

- IPv6 Drivers Business/Technical
- IPv6 Theory review
- IPv6 Migration Approaches (Compare in SPs vs Enterprise)
 - Dual Stack
 - Tunneling
 - Translation

Multicast Design

❑ Multicast

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

CCDE Practical Lab Scenarios

- 4 CCDE Practical Exam Scenarios will be presented
- Each Scenario is 2 hours in exam
- Mimic the real exam scenarios
- Service Provider and Enterprise Company backgrounds will be covered



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