€TRAINING

CCDE Network Design

20 - 31 May 2024
Amsterdam (Netherlands)

CCDE Network Design

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