CCIESP
CCIE Service Provider Boot Camp v4.0

Duration: 10 Days

Course Overview:

CCIE Service Provider Boot Camp (CCIESP) v4.0 is a 10-day workshop exploring skills required of a Network Engineer to design, configure, optimize, diagnose, and troubleshoot a complex highly available Service Provider network infrastructure. Candidates preparing for CCIE Service Provider certification possess thorough knowledge in IPv4 and IPv6 core, aggregation/edge, remote access technologies, Layer 2 and Layer 3 VPNs, plus managed services traversing an IP core networks. They also have an overall knowledge in security, virtualization and mobility technologies.

Prerequisites:

There are no formal prerequisites for Cisco CCIE certification. Candidates must first pass a written qualification exam and then pass the corresponding hands-on lab exam. Candidates are expected to have an in-depth understanding of the exam topics and are strongly encouraged to have three to five years of job experience before attempting certification.

Who Should Attend:

The primary audience for this course is as follows:

- Students seeking CCIE certification.

Course Objectives:

Upon completing this course, the learner will be able to meet these overall objectives:

- This boot camp is a combination of lecture and hands-on labs.

Course Outline:

Day 1

Class Introduction

- Instructor introduction
- Class organization, schedule, rules
- Basic Student Assessment, background and expectations

POD and LAB Topology

- Topologies, address allocation

Service Provider Certification

- CCxx Service provider program information and review

IP Address Fundamentals IPv4/v6

Routing Policies in IOS, IOS-XE and IOS-XR

- Describe, implement, and troubleshoot operation of route-maps and other mechanisms used and useful in IOS and IOS-XE
- Describe, implement, and troubleshoot operation of RPL and other mechanisms used and useful in IOS-XR

System Tasks: HA, Monitoring, Diagnostics & Labs

- Describe, implement, and troubleshoot syslog and logging functions
- Describe, implement, and troubleshoot SNMP traps, RMON, EEM, and EPC
- Describe, implement, and troubleshoot NetFlow and IPFIX
- Describe, implement, and troubleshoot IP SLA
- Describe configuration change, implementation, and rollback

Day 2

Link State Protocols: OSPF and IS-IS

- Describe, implement, and troubleshoot OSPFv2 and OSPFv3
- Describe, implement, and troubleshoot IS-IS
- Describe and optimize IGP scale and performance
- Describe and implement IGP fast convergence, detection, propagation, switchover, IP LFA
- Describe and implement route redistribution, route filtering, aggregation, loop

Day 3

BGP Basics

- Describe, implement, and troubleshoot IBGP, EBGP, and MP-BGP
- Describe, implement, and troubleshoot BGP route policy enforcement
- Describe, implement, and troubleshoot BGP prefix suppression
- Describe, implement, and troubleshoot BGP prefix based filtering
- Describe BGP path attribute
- Describe and optimize BGP scale and performance
- RPL with BGP

Day 4

BGP Advanced

- Describe, implement, and troubleshoot advanced BGP features
- Describe, implement, and troubleshoot BGP RPKI
- Describe, implement, and troubleshoot routing protocol security: BGP GTSH & protocol authentication
- MPLS Basics:
- Describe MPLS forwarding and control plane mechanisms

Course Outline (cont.):

- Describe, implement, and troubleshoot LDP
- Describe and optimize LDP scale and performance
- Describe, implement, and troubleshoot LDP security: authentication and label allocation filtering

Day 5

MPLS L3 Services

- Describe MP-BGP, BGP AFI VPNv4, VPNv6
- Describe, implement, and troubleshoot L3VPN
- Describe, implement, and troubleshoot Inter-AS L3VPN
- Describe, implement, and troubleshoot shared services, Extranet and Internet access
- Describe unified MPLS and CSC
- Describe, implement, and troubleshoot static routing, OSPF, EIGRP and BGP as PE-CE connectivity
- Describe and implement route redistribution, route filtering, aggregation, loop prevention

Day 6

MPLS L2 Services

- Describe, implement, and troubleshoot 802.1Q, QinQ, 802.1ad, EVC
- Describe, implement, and troubleshoot E-LINE, for example: VPWS, L2TPv3
- Describe, implement, and troubleshoot E-LAN and E-TREE, for example: VPLS and H-VPLS
- Describe, implement, and troubleshoot EVPN

Day 7

MPLS Traffic Engineering:

- Describe, implement, and troubleshoot RSVP
- Describe, implement, and troubleshoot ISIS and OSPF extensions
- Describe, implement, and troubleshoot MPLS TE policy enforcement
- Describe MPLS TE attributes
- Describe and optimize MPLS TE scale and performance
- Describe, implement, and troubleshoot MPLS advanced features: MPLS-TE Inter-AS
- Segment Routing

Day 8

IPv6 and SP – Coexistence and Migrations

- Describe, implement, and troubleshoot IPv6 transition mechanism, for example: NAT44, NAT64, 6RD, MAP, and DS Lite

Fast Convergence

- Describe, implement, and troubleshoot SS0/NSF, NSR, and GR
- Layer 2/3 failure detection techniques
- Describe, implement, and troubleshoot Layer 2 failure detection
- Describe, implement, and troubleshoot Layer 3 failure detection
- Describe, implement, and troubleshoot BGP PIC

Day 9

Multicast

- Describe, implement, and troubleshoot PIM (PIM-SM, PIM-SSM, and PIM-BIDIR)
- Describe, implement, and troubleshoot RP (Auto-RP, BSR, Static, Anycast RP, and MSDP)
- Describe, implement, and troubleshoot mVPN, draft Rosen, mLDP, BGP AD, BGP mVPN

Day 10

System and Network Security

- Describe, implement, and troubleshoot control plane protection: LPTS and CoPP
- Describe, implement, and troubleshoot device management, for example: MPP, SSH, VTY

Course Outline (cont.):

- Describe, implement, and troubleshoot logging and SNMP security
- Describe, implement, and troubleshoot uRPF, iACL
- Describe, implement, and troubleshoot RTBH and BGP FlowSpec
- Describe, implement, and troubleshoot MPLS OAM and Ethernet OAM

Quality of Service

- Describe, implement, and troubleshoot classification and marking
- Describe, implement, and troubleshoot congestion management and scheduling
- Describe, implement, and troubleshoot congestion avoidance
- Describe, implement, and troubleshoot MPLS QoS models (Pipe, Short Pipe, and Uniform)
- Describe, implement, and troubleshoot MPLS TE QoS (MAM, RDM, CBTS, PBTS, and DS-TE)