

bluemap

CISCO ROUTING

UPGRADE YOUR KNOWLEDGE

Layer-3 Protocol Training

Course Overview

The Layer-3 protocol training course aims to provide practical skills on routing technologies, its configuration and troubleshooting in enterprise and service provider network environments. This course is intended for networking professionals looking to sharpen their skills in layer-3 technologies.

Duration & Module Coverage

Duration: 15 Days (30hrs)

Session Options	Module Coverage
Session Weekdays[4] :	Day 1 - Modules 1
2 hours per day	Day 2 - Module 2
4 days per week	Day 3 - Module 3
Session Weekends:	Day 4 - Module 4
2 hours per day	Day 5 - Module 4 contd.
	Day 6 - Module 5
	Day 7 - Module 5 contd.
	Day 8- Module 6
	Day 9- Module 6 contd.
	Day 10- Module 6 contd.
	Day 11- Module 7
	Day 12- Module 8
	Day 13- Module 8 contd.
	Day 14- Module 9
	Day 15- Module 10

Learning Goals

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

1. Demonstrate knowledge of routing protocols
2. Understand complex Layer-3 network designs.
3. Configuration and troubleshooting skills of all routing protocols.

Pre-Requisites

Understanding of basic computer skills and TCP/IP is a pre-requisite for this training.

Teaching Methodology

This is a very hands-on course where participants carry out practical exercises according to the lab guide provided. The concepts are taught through implementation of real-world use-cases. Our exercises have been carefully designed to replicate scenarios participants will face in real life work conditions.

Who Should Take This Course?

This course is designed for network professionals with knowledge of basic networking looking forward to enhance Layer-3 configuration and troubleshooting.



Course Content

1. Network Principles

- IPv4 addressing and Subnetting
- Helper protocols- ARP, RARP, ICMP.
- Concept of VLSM
- IPv6 Addressing
- IPv6 Autoconfig
- IPv6 SLAAC

2. Routing Protocols

- Static Routing
- Default routing
- Longest Match Routing
- Dynamic Routing Protocols
- Interior and Exterior Gateway Routing Protocols
- Distance Vector and Link State Routing Protocols
- Administrative Distance and Metric

3. Routing Information Protocol [RIP]

- Describe RIP
- Describe RIPng
- Configure and verify RIPv2
- Summarization in RIP
- Passive Interfaces in RIP
- Filtering in RIPv2
- Changing AD value
- Triggered RIPv2 updates

4. Enhanced Interior Gateway Routing Protocols [EIGRP]

- Features of EIGRP
- Packets in EIGRP
- Configure and verify EIGRP
- Summarization in EIGRP
- Filtering in EIGRP
- Static Neighbors
- Passive Interfaces
- Stub router
- Stuck-in-active
- Changing default values- AD, timers, maximum paths
- Metric Manipulation
- Redistribution

5. Open Shortest Path First [OSPF]

- Features in OSPF
- Packets in OSPF
- Adjacency Formation
- Configure and verify OSPF
- Configure and verify OSPFv3
- Tables in OSPF- neighbor, database, routing.



- Types of Networks- Point-to-point and Broadcast
- DR and BDR
- Link State Advertisement [LSA] in OSPF
- Concept of areas
- Filtering
- Summarization
- Metric manipulation
- Types of areas- stub, totally stub, nssa.
- Redistribution in OSPF
- Changing default values- timers, AD, maximum paths.

6. Border Gateway Protocol [BGP]

- Features of BGP
- Path Vector Routing Protocol
- Packets in BGP
- Neighbor formation in BGP- eBGP and iBGP
- Rules in iBGP- Split horizon and Next Hop Rule
- Advertising networks in BGP
- Default route advertisement
- Path attributes and manipulation
- Confederation in BGP
- Filtering in BGP
- Summarization in BGP
- Configure and verify BGP

7. VPN Technologies

- Describe GRE
- VRF lite
- Configure Site-to-site VPN
- Describe and configure single hub DMVPN

8. IPv6

- IPv6 addressing scheme
- Types of IPv6 addresses- Global unicast, link-local unicast
- Configure and verify static routing
- Configure and verify EIGRP
- Configure and verify OSPFv3
- Configure and verify BGP in IPv6
- IPv4 and IPv6 co-exist- Dual Stack
- IPv6 to IPv4 tunneling

9. Infrastructure Services

- Access Control List- standard and extended
- Network Address Translation- static dynamic and PAT
- WAN Technologies- PPP and PPPoE with PAP and CHAP
- IP SLA
- DHCP
- NTP

10. Device Management and Security

- Logging and syslog
- Debugging
- Management via console and vty
- SNMP



- Device backup
- AAA
- Netflow configuration

Practical Learning Exercises

A lab guide will be provided to each student with requirement scenarios. Along with lab guide required VMs will be provided to set up individual labs for self practice.

Similarly there would be scenarios for implementing, verifying and troubleshooting all modules covered in the course.