

CISCO Network Associate: Routing and Switching

Duration: 2 day

Course Objective:

As Enterprises migrate toward controller based architectures, the role and skills required of a core network engineer are evolving and more vital than ever. To prepare for this network transition, the CCNA Routing and Switching course will not only introduce you to the knowledge of foundational technologies, but ensure you stay relevant with skill sets needed for the adoption of next generation technologies.

Topics to be covered:

Module 1: INTERNETWORKING BASIC

1. What Is an Internetwork?
2. History of Internetwork
3. Open System Interconnection Reference Model
4. Characteristics of the OSI Layers
5. OSI Layers Protocols and their functions
6. OSI Model and Communication between Systems
7. Encapsulation of Data
8. Connection-Oriented and Connectionless Network Services
9. Internetwork Addressing
10. Data Link Layer Addresses
11. MAC Addresses
12. Mapping Addresses
13. Network Layer Addresses
14. Flow Control Basics
15. Error-Checking Basics
16. Identify the appropriate media, cables, ports, and connectors

Module 2: LAN SWITCHING TECHNOLOGIES

1. Ethernet Technologies
2. Identify basic switching concepts
3. Introduction to SVI
4. Configure and verify initial switch configuration
5. Configure Remote Access Management on Cisco Switch
6. Managing the MAC Address Tables
7. Securing Cisco LAN Switches
8. Switchport Security on Cisco Switches
9. Etherchanneling Techniques
10. EtherChannel PAgP and LACP modes
11. Introduction to Spanning Tree Protocol
12. Introduction to Portfast, Uplink Fast, Backbone Fast
13. Introduction to BPDU Guard and BPDU Filter
14. Configuration of Root Guard

15. Rapid Spanning Tree Protocol (RSTP)
16. Introduction to Virtual Local Area Network (VLAN)
17. VLAN Frame Tagging
18. What is Native VLAN and Trunk Port?
19. How to configure VLAN trunk link and native VLAN?
20. Configuration of Basic VLAN
21. Configuration of VLAN with Router on Stick Method
22. Configuration of Multilayer Switch VLAN
23. Introduction to VTP
24. Configuration of VTP
25. Configuration of Voice VLAN
26. What is DTP (Dynamic Trunking Protocol?)

Module 3: IP ADDRESSING

1. IP Addressing Basics
2. IP Address Classes
3. Private IP Addressing
4. Public IP Addressing
5. Subnetting
6. Subnet Mask
7. Variable Length Subnet Masks (VLSMs)
8. Voice Overlay Subnets
9. Summarization
10. IP Multicast
11. Managing IP Addresses
12. IP Addressing in the Smart Business Architecture
13. Introducing IPv6
14. IPv6 Features
15. Differences between IPv4 and IPv6
16. IPv6 Address formats

Module 5: IP ROUTING TECHNOLOGIES

1. What is Routing?
2. What is null interface in a Cisco Router?
3. What is loopback interface in a Cisco Router?
4. Difference between Routing and Switching
5. Types of Routing Protocols
6. Introduction to Static Routing
7. Configuration of Static Routing
8. Understanding Routing Information Protocol (RIP)
9. Configuration of RIP v1 and V2
10. Understand the function of Distance Vector Protocol
11. Understanding Interior Gateway Routing Protocol (IGRP)
12. Configuration of IGRP

13. Understand the function of Link State Protocol
14. Understanding Enhanced Interior Gateway Routing Protocol (EIGRP)
15. Understanding Open Shortest Path First (OSPF)
16. Understanding Intermediate System-to-Intermediate System (IS-IS)
17. Understanding Border Gateway Protocol

Module 6: MANAGING CISCO IOS

1. Cisco Router Boot Sequence
2. Exploring the Cisco IOS File System
3. How to install Solarwinds Trivial File Transfer Protocol (TFTP) Server
4. Backup Cisco IOS and Configuration file thru TFTP
5. Naming Convention of Cisco IOS Image Files
6. Upgrade Cisco IOS from TFTP Server
7. Router Password Recovery

Module 7: IP SERVICES

1. Configure and verify DHCP Server
2. What is Cisco Discovery Protocol (CDP?)
3. Important Cisco Discovery Protocol (CDP) IOS commands
4. Introduction to Access Control Lists (ACL)
5. Standard Access Control Lists (ACLs)
6. Access Control List (ACL) - Wildcard Masks
7. Extended Access Control Lists (ACLs)
8. Extended Access Control List (ACL) - Operators
9. Extended Access Control List (ACL) - TCP and UDP port numbers and names
10. Extended Access Control List (ACL) - established Keyword
11. Named Access Control Lists (ACLs)
12. How to edit a Named Access Control List (ACL) on router
13. What is NAT (Network Address Translation?)
14. What are the Advantages and Disadvantages of NAT?
15. Different types of NAT - Static NAT, Dynamic NAT and PAT
16. NAT Address types - Inside Local, Inside Global, Outside Local, Outside Global
17. How to configure static NAT in a Cisco Router
18. How to configure dynamic NAT in a Cisco Router
19. How to configure PAT in a Cisco Router
20. Recognize High availability (FHRP)
21. Configure and verify Syslog
22. Describe SNMP v2 and v3

Module 8: WAN TECHNOLOGIES

1. What is Packet Switching Networks?
2. Introduction to Frame Relay
3. Configuration of Frame Relay
4. Introduction to ATM (Asynchronous Transfer Mode)

5. Introduction to X.25
6. What is Circuit Switching Networks?
7. Introduction to ISDN
8. Introduction to Dial-on-Demand Routing
9. Configuration of DSL Modem, Cable Modem and Dial up Configuration
10. Introduction to PPP Authentication
11. Introduction to PAP and CHAP authentication Methods
12. Configuration of PPP on CHAP
13. Configuration of PPP on PAP
14. Introduction of HDLC and Synchronous Data Link Control

Module 9: WIRELESS TECHNOLOGIES

1. Introduction to Wireless Technologies
2. Wireless Components Overview
3. Describe WLAN Standards and IEEE 802.11
4. Wireless Security Types

Pre-requisite:

None. However. Participants are required to bring their own laptops and chargers with Wi-Fi Connectivity.