



CCNP®

Routing & Switching

(Ver 2.0)

(3 Modules : ROUTE, SWITCH & TSHOOT)

Course Objective :

Cisco Certified Network Professional (CCNP) Routing and Switching certification validates the ability to plan, implement, verify and troubleshoot local and wide-area enterprise networks and work collaboratively with specialists on advanced security, voice, wireless and video solutions. The CCNP Routing and Switching certification is appropriate for those with at least one year of networking experience who are ready to advance their skills and work independently on complex network solutions. Those who achieve CCNP Routing and Switching have demonstrated the skills required in enterprise roles such as network engineer, support engineer, systems engineer or network technician. The routing and switching protocol knowledge from this certification will provide a lasting foundation as these skills are equally relevant in the physical networks of today and the virtualized network functions of tomorrow.

Module 1 : ROUTE v2.0 (300-101)

Module 2 : SWITCH v2.0 (300-115)

Module 3 : TSHOOT v2.0 (300-135)

Prerequisite:

Valid Cisco CCNA Routing and Switching certification or any Cisco CCIE certification can act as a prerequisite.

Certificate Of Attendance :

Certificate Of Attendance will be awarded to participants completing the course achieving minimum 75% attendance.

Training Methodology & Materials:

- Practical hands-on sessions, 75% lab-based and 25% theory-based.
- Well-designed lab sessions to enhance further understanding of the courseware.
- Training conducted by Certified Cisco Instructors.
- Training uses Cisco Authorized Course Materials.

Training Duration:

Full-Time : 15 Weekdays / 15 Sats (5 days per module) Time : 9.30am – 5.30pm
 Part-Time : 30 sessions (twice a week) Time : 7.00pm – 10.00pm

DETAILED COURSE OUTLINE

Module 1 : Implementing Cisco IP Routing (ROUTE) 2.0

1. Network Principles (10%)

- 1.1 Identify Cisco Express Forwarding concepts
- 1.2 Explain general network challenges
- 1.3 Describe IP operations
- 1.4 Explain TCP operations
- 1.5 Describe UDP operations

2. Layer 2 Technologies (10%)

- 2.1 Configure and verify PPP
- 2.2 Explain Frame Relay

3. Layer 3 Technologies (40%)

- 3.1 Identify, configure, and verify IPv4 addressing and subnetting
- 3.2 Identify IPv6 addressing and subnetting
- 3.3 Configure and verify static routing
- 3.4 Configure and verify default routing
- 3.5 Evaluate routing protocol types
- 3.6 Describe administrative distance
- 3.7 Troubleshoot passive interfaces
- 3.8 Configure and verify VRF lite
- 3.9 Configure and verify filtering with any protocol
- 3.10 Configure and verify redistribution between any routing protocols or routing sources
- 3.11 Configure and verify manual and autosummarization with any routing protocol
- 3.12 Configure and verify policy-based routing
- 3.13 Identify suboptimal routing

- 3.14 Explain ROUTE maps
- 3.15 Configure and verify loop prevention mechanisms
- 3.16 Configure and verify RIPv2
- 3.17 Describe RIPv2
- 3.18 Describe EIGRP packet types
- 3.19 Configure and verify EIGRP neighbor relationship and authentication
- 3.20 Configure and verify EIGRP stubs
- 3.21 Configure and verify EIGRP load balancing
- 3.22 Describe and optimize EIGRP metrics
- 3.23 Configure and verify EIGRP for IPv6
- 3.24 Describe OSPF packet types
- 3.25 Configure and verify OSPF neighbor relationship and authentication
- 3.26 Configure and verify network types, area types, and router types
- 3.27 Configure and verify OSPF path preference
- 3.28 Configure and verify OSPF operations
- 3.29 Configure and verify OSPF for IPv6 2013 Cisco Systems, Inc.
- 3.30 Describe, configure, and verify BGP peer relationships and authentication
- 3.31 Configure and verify eBGP (IPv4 and IPv6 address families)
- 3.32 Explain BGP attributes and best-path selection

4. VPN Technologies (10%)

- 4.1 Configure and verify GRE
- 4.2 Describe DMVPN (single hub)
- 4.3 Describe Easy Virtual Networking (EVN)

5. Infrastructure Security (10%)

- 5.1 Describe IOS AAA using local database
- 5.2 Describe device security using IOS AAA with TACACS+ and RADIUS
- 5.3 Configure and verify device access control
- 5.4 Configure and verify router security features

6. Infrastructure Services (20%)

- 6.0 Infrastructure Services
- 6.1 Configure and verify device management
- 6.2 Configure and verify SNMP
- 6.3 Configure and verify logging
- 6.4 Configure and verify Network Time Protocol (NTP)
- 6.5 Configure and verify IPv4 and IPv6 DHCP
- 6.6 Configure and verify IPv4 Network Address Translation (NAT)
- 6.7 Describe IPv6 NAT
- 6.8 Describe SLA architecture
- 6.9 Configure and verify IP SLA
- 6.10 Configure and verify tracking objects
- 6.11 Configure and verify Cisco NetFlow

Module 2 : Implementing Cisco IP Switched Networks (SWITCH) 2.0

1. Layer 2 Technologies (65%)

- 1.1 Configure and verify switch administration
- 1.2 Configure and verify Layer 2 protocols
- 1.3 Configure and verify VLANs
- 1.4 Configure and verify trunking
- 1.5 Configure and verify EtherChannels
- 1.6 Configure and verify spanning tree
- 1.7 Configure and verify other LAN switching technologies
- 1.8 Describe chassis virtualization and aggregation technologies

2. Infrastructure Security (20%)

- 2.1 Configure and verify switch security features
- 2.2 Describe device security using Cisco IOS AAA with TACACS+ and RADIUS

3 Infrastructure Services (15%)

- 3.1 Configure and verify first-hop redundancy protocols

Module 3 : Troubleshooting and Maintaining Cisco IP Networks (TSHOOT) 2.0

1. Network Principles (5%)

- 1.1 Use Cisco IOS troubleshooting tools
- 1.2 Apply troubleshooting methodologies

2. Layer 2 Technologies (40%)

- 2.1 Troubleshoot switch administration
- 2.2 Troubleshoot Layer 2 protocols
- 2.3 Troubleshoot VLANs
- 2.4 Troubleshoot trunking

- 2.5 Troubleshoot EtherChannels
- 2.6 Troubleshoot spanning tree
- 2.7 Troubleshoot other LAN switching technologies
- 2.8 Troubleshoot chassis virtualization and aggregation technologies

3. Layer 3 Technologies (40%)

- 3.1 Troubleshoot IPv4 addressing and subnetting
- 3.2 Troubleshoot IPv6 addressing and subnetting
- 3.3 Troubleshoot static routing
- 3.4 Troubleshoot default routing
- 3.5 Troubleshoot administrative distance
- 3.6 Troubleshoot passive interfaces
- 3.7 Troubleshoot VRF lite
- 3.8 Troubleshoot filtering with any protocol
- 3.9 Troubleshoot between any routing protocols or routing sources
- 3.10 Troubleshoot manual and autosummarization with any routing protocol
- 3.11 Troubleshoot policy-based routing
- 3.12 Troubleshoot suboptimal routing
- 3.13 Troubleshoot loop prevention mechanisms
- 3.14 Troubleshoot RIPv2
- 3.15 Troubleshoot EIGRP neighbor relationship and authentication
- 3.16 Troubleshoot loop free path selection
- 3.17 Troubleshoot EIGRP operations
- 3.18 Troubleshoot EIGRP stubs
- 3.19 Troubleshoot EIGRP load balancing
- 3.20 Troubleshoot EIGRP metrics
- 3.21 Troubleshoot EIGRP for IPv6
- 3.22 Troubleshoot OSPF neighbor relationship and authentication
- 3.23 Troubleshoot network types, area types, and router types
- 3.24 Troubleshoot OSPF path preference
- 3.25 Troubleshoot OSPF operations
- 3.26 Troubleshoot OSPF for IPv6
- 3.27 Troubleshoot BGP peer relationships and
- 3.28 Troubleshoot eBGP

4. VPN Technologies (5%)

- 4.1 Troubleshoot GRE

5. Infrastructure Security (5%)

- 5.1 Troubleshoot IOS AAA using local database
- 5.2 Troubleshoot device access control
- 5.3 Troubleshoot router security features

6. Infrastructure Services (5%)

- 6.1 Troubleshoot device management
- 6.2 Troubleshoot SNMP
- 6.3 Troubleshoot logging
- 6.4 Troubleshoot Network Time Protocol(NTP)
- 6.5 Troubleshoot IPv4 and IPv6 DHCP
- 6.6 Troubleshoot IPv4 Network Address Translation (NAT)
- 6.7 Troubleshoot SLA architecture
- 6.8 Troubleshoot tracking objects

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