

# CCNP v2 Eğitimi İçeriği

**Öngereksinimler:** CCNA

<http://www.cliguru.com/CCNA>

**Kurs Tanımı:**

Giriş seviyesi network bilgilerine sahip katılımcıları network'ün temeli olan Routing Switching alanında orta üst seviyeye çıkararak büyük ölçekli işlere yöneltmeyi amaçlar.

**ROUTE v2 - Implementing Cisco IP Routing v2 (300-101)**

- Network Principles
- Layer 2 Technologies
- Layer 3 Technologies
- VPN Technologies
- Infrastructure Security
- Infrastructure Services

**SWITCH v2 - Implementing Cisco IP Switched Networks v2 (300-115)**

- Layer 2 Technologies
- Infrastructure Security
- Infrastructure Services

**TSHOOT v2 - Troubleshooting and Maintaining Cisco IP Networks v2 (300-135)**

- Network Principles
- Layer 2 Technologies
- Layer 3 Technologies
- VPN Technologies
- Infrastructure Security
- Infrastructure Services

## ROUTE v2

# Implementing Cisco IP Routing v2 (300-101)

### 1.0 - Network Principles

- 1.1 - Identify Cisco Express Forwarding concepts
  - 1.1.a - FIB
  - 1.1.b - Adjacency table
- 1.2 - Explain general network challenges
  - 1.2.a - Unicast
  - 1.2.b - Out-of-order packets
  - 1.2.c - Asymmetric routing
- 1.3 - Describe IP operations
  - 1.3.a - ICMP Unreachable and Redirects
  - 1.3.b - IPv4 and IPv6 fragmentation
  - 1.3.c - TTL
- 1.4 - Explain TCP operations
  - 1.4.a - IPv4 and IPv6 (P)MTU
  - 1.4.b - MSS
  - 1.4.c - Latency
  - 1.4.d - Windowing
  - 1.4.e - Bandwidth-delay product
  - 1.4.f - Global synchronization
- 1.5 - Describe UDP operations
  - 1.5.a - Starvation
  - 1.5.b - Latency
- 1.6 - Recognize proposed changes to the network
  - 1.6.a - Changes to routing protocol parameters
  - 1.6.b - Migrate parts of the network to IPv6
  - 1.6.c - Routing protocol migration

### 2.0 - Layer 2 Technologies

- 2.1 - Configure and verify PPP
  - 2.1.a - Authentication (PAP, CHAP)
  - 2.1.b - PPPoE (client side only)
- 2.2 - Explain Frame Relay
  - 2.2.a - Operations
  - 2.2.b - Point-to-point
  - 2.2.c - Multipoint

### 3.0 - Layer 3 Technologies

- 3.1 - Identify, configure, and verify IPv4 addressing and subnetting
  - 3.1.a - Address types (Unicast, broadcast, multicast, and VLSM)

- 3.1.b - ARP
- 3.1.c - DHCP relay and server
- 3.1.d - DHCP protocol operations
- 3.2 - Identify IPv6 addressing and subnetting
  - 3.2.a - Unicast
  - 3.2.b - EUI-64
  - 3.2.c - ND, RS/RA
  - 3.2.d - Autoconfig (SLAAC)
  - 3.2.e - DHCP relay and server
  - 3.2.f - DHCP protocol operations
- 3.3 - Configure and verify static routing
- 3.4 - Configure and verify default routing
- 3.5 - Evaluate routing protocol types
  - 3.5.a - Distance vector
  - 3.5.b - Link state
  - 3.5.c - Path vector
- 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
  - 3.15.a - Route tagging and filtering
  - 3.15.b - Split-horizon
  - 3.15.c - Route poisoning
- 3.16 - Configure and verify RIPv2
- 3.17 - Describe RIPng
- 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
  - 3.21.a - Equal cost
  - 3.21.b - Unequal cost
- 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
  - 3.26.a - Point-to-point, multipoint, broadcast, nonbroadcast
  - 3.26.b - LSA types, area type: backbone, normal, transit, stub, NSSA, totally stub
  - 3.26.c - Internal router, backbone router, ABR, ASBR
  - 3.26.d - Virtual link
- 3.27 - Configure and verify OSPF path preference
- 3.28 - Configure and verify OSPF operations

- 3.29 - Configure and verify OSPF for IPv6
- 3.30 - Describe, configure, and verify BGP peer relationships and authentication
  - 3.30.a - Peer group
  - 3.30.b - Active, passive
  - 3.30.c - States and timers
- 3.31 - Configure and verify eBGP (IPv4 and IPv6 address families)
  - 3.31.a - eBGP
  - 3.31.b - 4-byte AS number
  - 3.31.c - Private AS
- 3.32 - Explain BGP attributes and best-path selection

#### **4.0 - VPN Technologies**

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

#### **5.0 - Infrastructure Security**

- 5.1 - Describe IOS AAA using local database
- 5.2 - Describe device security using IOS AAA with TACACS+ and RADIUS
  - 5.2.a - AAA with TACACS+ and RADIUS
  - 5.2.b - Local privilege authorization fallback
- 5.3 - Configure and verify device access control
  - 5.3.a - Lines (VTY, AUX, console)
  - 5.3.b - Management plane protection
  - 5.3.c - Password encryption
- 5.4 - Configure and verify router security features
  - 5.4.a - IPv4 access control lists (standard, extended, time-based)
  - 5.4.b - IPv6 traffic filter
  - 5.4.c - Unicast reverse path forwarding

#### **6.0 - Infrastructure Services**

- 6.1 - Configure and verify device management
  - 6.1.a - Console and VTY
  - 6.1.b - Telnet, HTTP, HTTPS, SSH, SCP
  - 6.1.c - (T)FTP
- 6.2 - Configure and verify SNMP
  - 6.2.a - v2
  - 6.2.b - v3
- 6.3 - Configure and verify logging
  - 6.3.a - Local logging, syslog, debugs, conditional debugs
  - 6.3.b - Timestamps
- 6.4 - Configure and verify Network Time Protocol (NTP)
  - 6.4.a - NTP master, client, version 3, version 4
  - 6.4.b - NTP authentication
- 6.5 - Configure and verify IPv4 and IPv6 DHCP

- 6.5.a - DHCP client, IOS DHCP server, DHCP relay
  - 6.5.b - DHCP options (describe)
- 6.6 - Configure and verify IPv4 Network Address Translation (NAT)
  - 6.6.a - Static NAT, dynamic NAT, PAT
- 6.7 - Describe IPv6 NAT
  - 6.7.a - NAT64
  - 6.7.b - NPTv6
- 6.8 - Describe SLA architecture
- 6.9 - Configure and verify IP SLA
  - 6.9.a - ICMP
- 6.10 - Configure and verify tracking objects
  - 6.10.a - Tracking objects
  - 6.10.b - Tracking different entities (for example, interfaces, IPSLA results)
- 6.11 - Configure and verify Cisco NetFlow
  - 6.11.a - NetFlow v5, v9
  - 6.11.b - Local retrieval
  - 6.12.c - Export (configuration only)

## SWITCH v2

# Implementing Cisco IP Switched Networks v2 (300-115)

### 1.0 - Layer 2 Technologies

- 1.1 - Configure and verify switch administration
  - 1.1.a - SDM templates
  - 1.1.b - Managing MAC address table
  - 1.1.c - Troubleshoot Err-disable recovery
- 1.2 - Configure and verify Layer 2 protocols
  - 1.2.a - CDP, LLDP
  - 1.2.b - UDLD
- 1.3 - Configure and verify VLANs
  - 1.3.a - Access ports
  - 1.3.b - VLAN database
  - 1.3.c - Normal, extended VLAN, voice VLAN
- 1.4 - Configure and verify trunking
  - 1.4.a - VTPv1, VTPv2, VTPv3, VTP pruning
  - 1.4.b - dot1Q
  - 1.4.c - Native VLAN
  - 1.4.d - Manual pruning
- 1.5 - Configure and verify EtherChannels
  - 1.5.a - LACP, PAgP, manual
  - 1.5.b - Layer 2, Layer 3
  - 1.5.c - Load balancing
  - 1.5.d - EtherChannel misconfiguration guard
- 1.6 - Configure and verify spanning tree
  - 1.6.a - PVST+, RPVST+, MST
  - 1.6.b - Switch priority, port priority, path cost, STP timers
  - 1.6.c - PortFast, BPDUguard, BPDUfilter
  - 1.6.d - Loopguard and Rootguard
- 1.7 - Configure and verify other LAN switching technologies
  - 1.7.a - PAN, RSPAN
- 1.8 - Describe chassis virtualization and aggregation technologies
  - 1.8.a - Stackwise

### 2.0 - Infrastructure Security

- 2.1 - Configure and verify switch security features
  - 2.1.a - DHCP snooping
  - 2.1.b - IP Source Guard
  - 2.1.c - Dynamic ARP inspection
  - 2.1.d - Port security

- 2.1.e - Private VLAN
- 2.1.f - Storm control
- 2.2 - Describe device security using Cisco IOS AAA with TACACS+ and RADIUS
  - 2.2.a - AAA with TACACS+ and RADIUS
  - 2.2.b - Local privilege authorization fallback

### **3.0 - Infrastructure Services**

- 3.1 - Configure and verify first-hop redundancy protocols
  - 3.1.a - HSRP
  - 3.1.b - VRRP
  - 3.1.c - GLBP

## TSHOOT v2

# Troubleshooting and Maintaining Cisco IP Networks v2 (300-135)

### 1.0 - Network Principles

- 1.1 - Use Cisco IOS troubleshooting tools
  - 1.1.a - Debug, conditional debug
  - 1.1.b - Ping and trace route with extended options
- 1.2 - Apply troubleshooting methodologies
  - 1.2.a - Diagnose the root cause of networking issues (analyze symptoms, identify and describe root cause)
  - 1.2.b - Design and implement valid solutions
  - 1.2.c - Verify and monitor resolution

### 2.0 - Layer 2 Technologies

- 2.1 - Troubleshoot switch administration
  - 2.1.a - SDM templates
  - 2.1.b - Managing MAC address table
  - 2.1.c - Troubleshoot Err-disable recovery
- 2.2 - Troubleshoot Layer 2 protocols
  - 2.2.a - CDP, LLDP
  - 2.2.b - UDLD
- 2.3 - Troubleshoot VLANs
  - 2.3.a - Access ports
  - 2.3.b - VLAN database
  - 2.3.c - Normal, extended VLAN, voice VLAN
- 2.4 - Troubleshoot trunking
  - 2.4.a - VTPv1, VTPv2, VTPv3, VTP pruning
  - 2.4.b - dot1Q
  - 2.4.c - Native VLAN
  - 2.4.d - Manual pruning
- 2.5 - Troubleshoot EtherChannels
  - 2.5.a - LACP, PAgP, manual
  - 2.5.b - Layer 2, Layer 3
  - 2.5.c - Load balancing
  - 2.5.d - EtherChannel misconfiguration guard
- 2.6 - Troubleshoot spanning tree
  - 2.6.a - PVST+, RPVST+, MST
  - 2.6.b - Switch priority, port priority, path cost, STP timers
  - 2.6.c - PortFast, BPDUguard, BPDUfilter
  - 2.6.d - Loopguard, Rootguard
- 2.7 - Troubleshoot other LAN switching technologies



- 2.7.a - SPAN, RSPAN
- 2.8 - Troubleshoot chassis virtualization and aggregation technologies
  - 2.8.a - Stackwise

### **3.0 - Layer 3 Technologies**

- 3.1 - Troubleshoot IPv4 addressing and subnetting
  - 3.1.a - Address types (Unicast, broadcast, multicast, and VLSM)
  - 3.1.b - ARP
  - 3.1.c - DHCP relay and server
  - 3.1.d - DHCP protocol operations
- 3.2 - Troubleshoot IPv6 addressing and subnetting
  - 3.2.a - Unicast
  - 3.2.b - EUI-64
  - 3.2.c - ND, RS/RA
  - 3.2.d - Autoconfig (SLAAC)
  - 3.2.e - DHCP relay and server
  - 3.2.f - DHCP protocol operations
- 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 redistribution 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
  - 3.13.a - Route tagging and filtering
  - 3.13.b - Split-horizon
  - 3.13.c - Route poisoning
- 3.14 - Troubleshoot RIPv2
- 3.15 - Troubleshoot EIGRP neighbor relationship and authentication
- 3.16 - Troubleshoot loop free path selection
  - 3.16.a - RD, FD, FC, successor, feasible successor
- 3.17 - Troubleshoot EIGRP operations
  - 3.17.a - Stuck in active
- 3.18 - Troubleshoot EIGRP stubs
- 3.19 - Troubleshoot EIGRP load balancing
  - 3.19.a - Equal cost
  - 3.19.b - Unequal cost
- 3.20 - Troubleshoot EIGRP metrics
- 3.21 - Troubleshoot EIGRP for IPv6
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  - 3.27.c - States and timers
- 3.28 - Troubleshoot eBGP
  - 3.28.a - eBGP
  - 3.28.b - 4-byte AS number
  - 3.28.c - Private AS

#### **4.0 - VPN Technologies**

- 4.1 - Troubleshoot GRE

#### **5.0 - Infrastructure Security**

- 5.1 - Troubleshoot IOS AAA using local database
- 5.2 - Troubleshoot device access control
  - 5.2.a - Lines (VTY, AUX, console)
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