NETLOGIC TRAINING CENTER

Course Training

CCNP Implement Cisco IP Route – CCNP Route (300-101 ROUTE) version 2.0

Course Content

ROUTE v2.0 includes major updates and follows an updated blueprint. However, note that this course does not cover all items listed on the blueprint. Some older topics have been removed or simplified, while several new IPv6 routing topics have been added. Course content has been adapted to Cisco IOS Software Release 15 and technically updated. Course also introduces new type of labs, called discovery labs. Discovery labs are instructor guided lab through which student explores new topics in an interactive way. All labs are developed only as virtual labs. To get the full course experience, you should cover everything, including Introduction, Discovery labs, Summary, and Module Self-Check.

Course Objective

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

- Describe routing protocols, different remote connectivity options and their impact on routing and implement RIPng
- Configure EIGRP in IPv4 and IPv6 environment
- Configure OSPF in IPv4 and IPv6 environment
- Implement route redistribution using filtering mechanisms
- Implement path control using policy based routing and IP SLA
- Implement enterprise Internet connectivity
- Secure Cisco routers according to best practices and configure authentication for routing protocols

Course Prerequisite

The knowledge and skills that a learner must have before attending this Curriculum are as follows:

- Describing network fundamentals
- Establishing Internet and WAN connectivity (IPv4 and IPv6)
- Managing network device security
- Operating a medium-sized LAN with multiple switches, supporting VLANs, trunking, and spanning tree
- Troubleshooting IP connectivity (IPv4 and IPv6)
- Configuring and troubleshooting EIGRP and OSPF (IPv4 and IPv6)
- Configuring devices for SNMP, Syslog, and NetFlow access
- Managing Cisco device configurations, Cisco IOS images, and licenses
- It is highly recommended that this course be taken after the following Cisco courses:
    - Interconnecting Cisco Networking Devices v2.0, Part 1 (ICND1 v2.0) and Part 2 (ICND2 v2.0)
    - Interconnecting Cisco Networking Devices: Accelerated version 2.0 (CCNAX v2.0)

Course Pre-Test

- Not requirement

Course Details

Day 1

Item	Subject	Details	Personal Lab and devices	Workgroup Lab and devices
1	Network Principles	• Identify Cisco Express Forwarding concepts a FIB b Adjacency table • Explain general network challenges a Unicast b Out-of-order packets c Asymmetric routing • Describe IP operations a ICMP Unreachable and Redirects b IPv4 and IPv6 fragmentation c TTL • Explain TCP operations a IPv4 and IPv6 (P)MTU b MSS c Latency d Windowing e Bandwidth-delay product f Global synchronization • Describe UDP operations a Starvation b Latency • Recognize proposed changes to the network a Changes to routing protocol parameters b Migrate parts of the network to IPv6 c Routing protocol migration	Theory and Lecture	
		Break		
2	Layer 2 Technologies	• Configure and verify PPP a Authentication (PAP, CHAP) b PPPoE (client side only) • Explain Frame Relay a Operations b Point-to-point c Multipoint	Theory and Lecture	
	Summary challenge advance lab for PPPoE and Frame-Relay Technologies	Lab 1 - factory default network device for new configuration Lab 2 - configuration PPPoE and verifying Lab 3 - configuration Frame-Relay Point-to-Point and Multipoint and verifying	(Lab 1) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit	(Lab 2 and Lab 3) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit

Day 2

Item	Subject	Details	Trainee Lab and devices	Workgroup Lab and devices
3	Layer 3 Technologies	• Identify, configure, and verify IPv4 addressing and subnetting a Address types (Unicast, broadcast, multicast, and VLSM) b ARP c DHCP relay and server d DHCP protocol operations • Identify IPv6 addressing and subnetting a Unicast b EUI-64 c ND, RS/RA d Autoconfig (SLAAC) e DHCP relay and server f DHCP protocol operations • Configure and verify static routing • Configure and verify default routing • Evaluate routing protocol types a Distance vector b Link state c Path vector	Theory and Lecture	
		Break		
		• Describe administrative distance • Troubleshoot passive interfaces • Configure and verify VRF lite • Configure and verify filtering with any protocol • Configure and verify redistribution between any routing protocols or routing sources • Configure and verify manual and autosummarization with any routing protocol • Configure and verify policy-based routing • Identify suboptimal routing • Explain ROUTE maps • Configure and verify loop prevention mechanisms a Route tagging and filtering b Split-horizon c Route poisoning • Configure and verify RIPv2 • Describe RIPng	Theory and Lecture	
	Summary challenge advance lap for RIPv2, Route-map and Policy-Base-Routing	Lab 1 - configuration Route-map and verifying Route-map operation Lab 2 - configuration RIPv1 and v2 and feature route summarization Lab 3 - configuration Policy-Base-Routing (PBR) and verifying PBR operation	(Lab 1) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit	(Lab 2 and Lab 3) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit

Day 3

Item	Subject	Details	Trainee Lab and devices	Workgroup Lab and devices
		• Describe EIGRP packet types • Configure and verify EIGRP neighbor relationship and authentication • Configure and verify EIGRP stubs • Configure and verify EIGRP load balancing a Equal cost b Unequal cost • Describe and optimize EIGRP metrics • Configure and verify EIGRP for IPv6 • Describe OSPF packet types • 3Configure and verify OSPF neighbor relationship and authentication • Configure and verify network types, area types, and router types a Point-to-point, multipoint, broadcast, nonbroadcast b LSA types, area type: backbone, normal transit, stub, NSSA, totally stub c Internal router, backbone router, ABR, ASBR d Virtual link	Theory and Lecture	
		Break		
		• Configure and verify OSPF path preference • Configure and verify OSPF operations • Configure and verify OSPF for IPv6 • Describe, configure, and verify BGP peer relationships and authentication a Peer group b Active, passive c States and timers • Configure and verify eBGP (IPv4 and IPv6 address families) a eBGP b 4-byte AS number c Private AS • Explain BGP attributes and best-path selection	Theory and Lecture	
	Summary challenge advance lap for OSPF and BGP	Lab 1 - configuration OSPFv2 and verifying OSPF operation Lab 2 - Configuration BGP and verifying BGP operation	(Lab 1 and Lab 2) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit	(Lab 1 and Lab 2) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit

Day 4

Item	Subject	Details	Trainee Lab and devices	Workgroup Lab and devices
4	VPN Technologies	• Configure and verify GRE • Describe DMVPN (single hub) • Describe Easy Virtual Networking (EVN)	Theory and Lecture	
		Break		
5	Infrastructure Security	• Describe IOS AAA using local database • Describe device security using IOS AAA with TACACS+ and RADIUS a AAA with TACACS+ and RADIUS b Local privilege authorization fallback • Configure and verify device access control a Lines (VTY, AUX, console) b Management plane protection c Password encryption • Configure and verify router security features a IPv4 access control lists (standard, extended, time-based) b IPv6 traffic filter c Unicast reverse path forwarding	Theory and Lecture	
	Summary challenge advance lap for secure device access control and time-base access-list	Lab 1 - configuration secure device access control Lab 2 - time-base access-list and verifying Time-Base ACL operation	(Lab 1 and Lab 2) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit	

Day 5

Item	Subject	Details	Trainee Lab and devices	Workgroup Lab and devices
6	Infrastructure Services	• Configure and verify device management a Console and VTY b Telnet, HTTP, HTTPS, SSH, SCP c (T)FTP • Configure and verify SNMP a v2 b v3 • Configure and verify logging a Local logging, syslog, debugs, conditional debugs b Timestamps Configure and verify Network Time Protocol (NTP) a NTP master, client, version 3, version 4 b NTP authentication • Configure and verify IPv4 and IPv6 DHCP a DHCP client, IOS DHCP server, DHCP relay b DHCP options (describe)	Theory and Lecture	
		Break		
		• Configure and verify IPv4 Network Address Translation (NAT) a Static NAT, dynamic NAT, PAT • Describe IPv6 NAT a NAT64 b NPTv6 • Describe SLA architecture • Configure and verify IP SLA a ICMP • Configure and verify tracking objects a Tracking objects b Tracking different entities (for example, interfaces, IPSLA results) • Configure and verify Cisco NetFlow a NetFlow v5, v9 b Local retrieval c Export (configuration only)	Theory and Lecture	
	Summary challenge advance lap for DHCP and IP SLA	Lab 1 - configuration DHCP and verifying DHCP operation Lab 2 - configuration IP SLA and tracking object	(Lab 1) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit	(Lab 2) **Real Device** ISR router 4321 1 Unit Catalyst 2960 1 Unit Catalyst 3560-CX 1 Unit

Course Post-Test

Not Required

Course Materials

Not include in this class training (but you can requested from sale team)

Course Devices Training (Per 1 Person)

Cisco Router ISR 4321

Cisco Catalyst 2960

Cisco Catalyst 3605-CX

CISCO
CCNP