Troubleshooting and Maintaining Cisco IP Networks

Exam code: 300-135

Duration: 40 Hrs

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 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, 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 EIGPR 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

3.22 Troubleshoot OSPF neighbor relationship and authentication

3.23 Troubleshoot network types, area types, and router types

- 3.23.a Point-to-point, multipoint, broadcast, nonbroadcast
- 3.23.b LSA types, area type: backbone, normal, transit, stub, NSSA, totally stub
- 3.23.c Internal router, backbone router, ABR, ASBR
- 3.23.d Virtual link

3.24 Troubleshoot OSPF path preference

3.25 Troubleshoot OSPF operations

3.26 Troubleshoot OSPF for IPv6

3.27 Troubleshoot BGP peer relationships and authentication

- 3.27.a Peer group
- 3.27.b Active, passive
- 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)
- 5.2.b Management plane protection
- 5.2.c Password encryption

5.3 Troubleshoot router security features

- 5.3.a IPv4 access control lists (standard, extended, time-based)
- 5.3.b IPv6 traffic filter
- 5.3.c Unicast reverse path forwarding

6.0 Infrastructure Services

6.1 Troubleshoot device management

- 6.1.a Console and VTY
- 6.1.b Telnet, HTTP, HTTPS, SSH, SCP
- 6.1.c (T) FTP

6.2 Troubleshoot SNMP

- 6.2.a v2
- 6.2.b v3

6.3 Troubleshoot logging

- 6.3.a Local logging, syslog, debugs, conditional debugs
- 6.3.b Timestamps

6.4 Troubleshoot Network Time Protocol(NTP)

- 6.4.a NTP master, client, version 3, version 4
- 6.4.b NTP authentication

6.5 Troubleshoot IPv4 and IPv6 DHCP

- 6.5.a DHCP client, IOS DHCP server, DHCP relay
- 6.5.b DHCP options (describe)

6.6 Troubleshoot IPv4 Network Address Translation (NAT)

- 6.6.a Static NAT, Dynamic NAT, PAT

6.7 Troubleshoot SLA architecture

6.8 Troubleshoot tracking objects

- 6.8.a Tracking objects
  - 6.8.b Tracking different entities (for example, interfaces, IPSLA results)