Implementing Cisco Enterprise Advanced Routing and Services v1.0 (300-410)

(Cisco Certification Mapped Curriculum)

Layer 3 Technologies

- Troubleshoot administrative distance (all routing protocols)
- Troubleshoot route map for any routing protocol (attributes, tagging, filtering)
- Troubleshoot loop prevention mechanisms (filtering, tagging, split horizon, route poisoning)
- Troubleshoot redistribution between any routing protocols or routing sources
- Troubleshoot manual and auto-summarization with any routing protocol
- Configure and verify policy-based routing
- Configure and verify VRF-Lite
- Describe Bidirectional Forwarding Detection
- Troubleshoot EIGRP (classic and named mode)
  - Address families (IPv4, IPv6)
  - Neighbor relationship and authentication
  - Loop-free path selections (RD, FD, FC, successor, feasible successor, Stuck in active), Stubs, Load balancing (equal and unequal cost)
  - Metrics
- Troubleshoot OSPF (v2/v3)
  - Address families (IPv4, IPv6)
  - Neighbor relationship and authentication
  - Network types, area types, and router types
  - Point-to-point, multipoint, broadcast, non-broadcast
  - Area type: backbone, normal, transit, stub, NSSA, totally stub
  - Internal router, backbone router, ABR, ASBR
  - Virtual link
  - Path preference
- Troubleshoot BGP (Internal and External)
  - Address families (IPv4, IPv6)
  - Neighbor relationship and Authentication (next-hop, mulithop, 4-byte AS, private AS, route refresh, synchronization, operation, peer group, states and timers)
  - Path preference (attributes and best-path)
  - Route reflector (excluding multiple route reflectors, confederations, dynamic peer)
  - Policies (inbound/outbound filtering, path manipulation)

VPN Technologies

- ➢ Describe MPLS operations (LSR, LDP, label switching, LSP)
- ➢ Describe MPLS Layer 3 VPN
- ➢ Configure and verify DMVPN (single hub)
  - GRE/mGRE
  - NHRP
  - IPsec
  - Dynamic neighbor
  - Spoke-to-spoke

Infrastructure Security

- ➢ Troubleshoot device security using IOS AAA (TACACS+, RADIUS, local database)
- ➢ Troubleshoot router security features
  - IPv4 access control lists (standard, extended, time-based)
  - IPv6 traffic filter
  - Unicast reverse path forwarding (uRPF)
- ➢ Troubleshoot control plane policing (CoPP) (Telnet, SSH, SNMP,   EIGRP, OSPF, BGP)
- ➢ Describe IPv6 First Hop security features (RA guard, DHCP guard, binding table, ND inspection/snooping, source guard)

Infrastructure Services

- ➢ Troubleshoot device management
  - Console and VTY
  - Telnet, HTTP, HTTPS, SSH, (T)FTP
- ➢ Troubleshoot network problems using logging (local, syslog, debugs, conditional debugs, timestamps)
- ➢ Cisco DNA Center assurance (connectivity, monitoring, device health, network health) NetFlow (v5, v9, flexible NetFlow)
- ➢ Troubleshoot IPv4 and IPv6 DHCP (DHCP client, IOS DHCP server, DHCP relay, DHCP options) Troubleshoot network performance issues using IP SLA (jitter, tracking objects, delay, connectivity)