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

Exam Description: Implementing Cisco Enterprise Advanced Routing and Services v1.0 (ENARSI 300-410) is a 90-minute exam associated with the CCNP Enterprise Certification. This exam certifies a candidate's knowledge for implementation and troubleshooting of advanced routing technologies and services including Layer 3, VPN services, infrastructure security, infrastructure services, and infrastructure automation. The course, Implementing Cisco Enterprise Advanced Routing and Services, helps candidates to prepare for this exam.

The following topics are general guidelines for the content likely to be included on the exam. However, other related topics may also appear on any specific delivery of the exam. To better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

35%   1.0   Layer 3 Technologies

1.1   Troubleshoot administrative distance (all routing protocols)

1.2   Troubleshoot route map for any routing protocol (attributes, tagging, filtering)

1.3   Troubleshoot loop prevention mechanisms (filtering, tagging, split horizon, route poisoning)

1.4   Troubleshoot redistribution between any routing protocols or routing sources

1.5   Troubleshoot manual and auto-summarization with any routing protocol

1.6   Configure and verify policy-based routing

1.7   Configure and verify VRF-Lite

1.8   Describe Bidirectional Forwarding Detection

1.9   Troubleshoot EIGRP (classic and named mode)

    1.9.a   Address families (IPv4, IPv6)

    1.9.b   Neighbor relationship and authentication

    1.9.c   Loop-free path selections (RD, FD, FC, successor, feasible successor, stuck in active)

    1.9.d   Stubs

    1.9.e   Load balancing (equal and unequal cost)

    1.9.f   Metrics

1.10   Troubleshoot OSPF (v2/v3)

    1.10.a   Address families (IPv4, IPv6)

    1.10.b   Neighbor relationship and authentication

    1.10.c   Network types, area types, and router types

        1.10.c (i) Point-to-point, multipoint, broadcast, nonbroadcast

        1.10.c (ii) Area type: backbone, normal, transit, stub, NSSA, totally stub

        1.10.c (iii) Internal router, backbone router, ABR, ASBR

        1.10.c (iv) Virtual link

    1.10.d   Path preference

1.11   Troubleshoot BGP (Internal and External)

ROOMAN TECHNOLOGIES

1.11.a   Address families (IPv4, IPv6)
1.11.b   Neighbor relationship and authentication (next-hop, mulithop, 4-byte AS, private AS, route refresh, synchronization, operation, peer group, states and timers)
1.11.c   Path preference (attributes and best-path)
1.11.d   Route reflector (excluding multiple route reflectors, confederations, dynamic peer)
1.11.e   Policies (inbound/outbound filtering, path manipulation)

20%   2.0   VPN Technologies
2.1   Describe MPLS operations (LSR, LDP, label switching, LSP)
2.2   Describe MPLS Layer 3 VPN
2.3   Configure and verify DMVPN (single hub)
  2.3.a   GRE/mGRE
  2.3.b   NHRP
  2.3.c   IPsec
  2.3.d   Dynamic neighbor
  2.3.e   Spoke-to-spoke

20%   3.0   Infrastructure Security
3.1   Troubleshoot device security using IOS AAA (TACACS+, RADIUS, local database)
3.2   Troubleshoot router security features
  3.2.a   IPv4 access control lists (standard, extended, time-based)
  3.2.b   IPv6 traffic filter
  3.2.c   Unicast reverse path forwarding (uRPF)

3.3   Troubleshoot control plane policing (CoPP) (Telnet, SSH, HTTP(S), SNMP, EIGRP, OSPF, BGP)

3.4   Describe IPv6 First Hop security features (RA guard, DHCP guard, binding table, ND inspection/snooping, source guard)

25%   4.0   Infrastructure Services
4.1   Troubleshoot device management
  4.1.a   Console and VTY
  4.1.b   Telnet, HTTP, HTTPS, SSH, SCP
  4.1.c   (T)FTP

4.2   Troubleshoot SNMP (v2c, v3)
4.3   Troubleshoot network problems using logging (local, syslog, debugs, conditional debugs, timestamps)
4.4   Troubleshoot IPv4 and IPv6 DHCP (DHCP client, IOS DHCP server, DHCP relay, DHCP options)
4.5   Troubleshoot network performance issues using IP SLA (jitter, tracking objects, delay, connectivity)
4.6   Troubleshoot NetFlow (v5, v9, flexible NetFlow)
4.7   Troubleshoot network problems using Cisco DNA Center assurance (connectivity, monitoring, device health, network health)