CCDE Practical Exam v3.0
Large Scale Networks Technology List

Description: The technologies shown in this document are associated with the Large Scale Networks *area of expertise* of the CCDE Practical Exam v3.0. Candidates are expected to have a deep understanding of these technologies. Each of these technologies may appear in any delivery of the exam. If applicable for the technology candidates must expect content that is dual-stack by nature.

Note: The technologies listed here are in addition to the technologies listed in the CCDE Core Technology list.

1.0   Transport Technologies
- 1.1   Carrier Ethernet
- 1.2   Ring-based (such as SONET/SDH, OTU)
- 1.3   Frame relay (migration only)
- 1.4   Wireless (including satellite links, microwave links)
- 1.5   Optical

2.0   Layer 2 Control Plane
- 2.1   Loop detection protocols and loop-free topology mechanisms
  - 2.1.a   REP
- 2.2   Transport mechanisms and their interaction with routing protocols over different link types

3.0   Layer 3 Control Plane
- 3.1   Factors affecting convergence
  - 3.1.a   Transport
- 3.2   Generic routing and addressing concepts
  - 3.2.a   Large-scale NAT
- 3.3   Multicast routing concepts
  - 3.3.a   Multicast delivery/implementation models
  - 3.3.b   mVPN

4.0   Network Virtualization
- 4.1   Multiprotocol Label Switching
  - 4.1.a   Segment Routing
  - 4.1.b   LDP and SR Interworking

4.1.c   MPLS Traffic Engineering

4.2   QoS techniques and strategies

    4.2.a   End-user requirements

    4.2.b   DiffServ

    4.2.c   IntServ

4.3   EVPN

    4.3.a   Management plane

    4.3.b   Control plane

    4.3.c   Data plane (such as VXLAN, MPLS, PBB)

    4.3.d   Segmentation

    4.3.e   Policy

        4.3.e.i   Security

        4.3.e.ii   Topologies

        4.3.e.iii   Multiple site strategy

5.0   Security

5.1   Infrastructure security

    5.1.a   Data plane protection techniques

        5.1.a.i   uRPF

        5.1.a.ii   RTBH

6.0   Automation

6.1   Lifecycle management/closed-loop automation