Implementing Cisco Service Provider Next-Generation
Core Network Services (642-887)

Exam Description: The 642-887, SPCORE, Implementing Cisco Service Provider Next-Generation Core Network Services exam is associated with the CCNP® Service Provider certification. This 90-minute, 65–75 questions exam tests a candidate's knowledge on the concepts and implementation of MPLS, LDP, MPLS-TE and QoS policies from the Service Provider perspective. This exam covers the Cisco IOS, IOS-XE and IOS-XR operating systems. Candidates can prepare for this exam by taking the Implementing Cisco Service Provider Next-Generation Core Network Services (SPCORE) course. The exam is closed book and no outside reference materials are allowed.

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. In order to better reflect the contents of the exam and for clarity purposes, the guidelines below may change at any time without notice.

38% **1.0** **QOS in a Service Provider IP NGN Environment**
    1.1   Describe the DiffServ and IntServ QoS models
    1.2   Describe the QoS mechanisms (classification and marking, congestion management and avoidance, traffic policing and shaping)
    1.3   Describe IPv6 Flow Label
    1.4   Describe trust boundaries in enterprise and SP environments
    1.5   Describe Cisco MQC for QoS configurations
    1.6   Describe hierarchical QoS configurations
    1.7   Describe the Cisco NBAR feature for discovering network protocols and for packets classifications
    1.8   Describe the typical Edge PE routers and Core P routers QoS requirements
    1.9   Implement classification and marking in an inter-domain network using QPPB on Cisco IOS-XR and IOS-XE
    1.10   Implement class-based markings on Cisco IOS-XR and IOS-XE
    1.11   Implement QoS pre-classify on tunnel interface on Cisco IOS-XR and IOS-XE
    1.12   Implement CB-WFQ on Cisco IOS-XR and IOS-XE
    1.13   Implement LLQ on Cisco IOS-XR and IOS-XE
    1.14   Implement WRED on Cisco IOS-XR and IOS-XE
    1.15   Implement traffic policing on Cisco IOS-XR and IOS-XE
    1.16   Implement traffic shaping on Cisco IOS-XR and IOS-XE
    1.17   Describe LPTS and hardware rate limiters on Cisco IOS-XR routers
    1.18   Describe MPLS EXP bits
    1.19   Describe MPLS QoS implementation concepts and models
    1.20   Implement MPLS DiffServ tunneling on Cisco IOS-XR and IOS-XE
    1.21   Troubleshoot QoS IOS-XR and IOS-XE configuration errors

32%   **2.0**   **MPLS/LDP in a Service Provider IP NGN Environment**
- 2.1   Describe the CEF, FIB, LFIB and LIB tables on Cisco routers
- 2.2   Describe MPLS labels and label stack operations on Cisco routers
- 2.3   Describe LDP operations in Cisco routers
- 2.4   Describe MPLS OAM (MPLS LSP ping and MPLS traceroute)
- 2.5   Describe MPLS applications in service provider environment
- 2.6   Implement LDP on Cisco IOS-XR and IOS-XE
- 2.7   Implement LDP high availability features on Cisco IOS-XR and IOS-XE
- 2.8   Troubleshoot LDP on IOS-XR and IOS-XE configuration errors

22%   **3.0**   **MPLS/LDP in a Service Provider IP NGN Environment**
- 3.1   Describe MPLS traffic engineering (TE) concepts
- 3.2   Describe MPLS TE constraint-based path computations
- 3.3   Describe the details of MPLS TE tunnels, including path setup procedures and path maintenance
- 3.4   Describe methods of assigning traffic into MPLS TE tunnels
- 3.5   Implement MPLS TE tunnels on Cisco IOS-XR and IOS-XE
- 3.6   Implement MPLS TE bandwidth control on Cisco IOS-XR and IOS-XE
- 3.7   Implement MPLS TE link and node protections on Cisco IOS-XR and IOS-XE

8%   **4.0**   **Transport Technologies**
- 4.1   Describe the SP core transition from ATM/SONET/SDH based backbone to packet based IP/MPLS backbone
- 4.2   Implement 10/40/100 Gigabit Ethernet Interfaces on Cisco IOS-XR routers
- 4.3   Describe DWDM, IPoDWDM and ROADM
- 4.4   Implement IPoDWDM controller/interface on Cisco IOS-XR routers