# Implementing Cisco Service Provider Next Generation Edge Network Services (642-889)

**Exam Description:** The 642-889 SPEDGE Implementing Cisco Service Provider Next-Generation Edge 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 VPN solutions from the Service Providers perspective, including simple and complex layer 3 MPLS VPNs, CSC, 6VPE, and layer 2 VPNs such as AToM and VPLS. 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 Edge Network Services (SPEDGE) 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.

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| **15%** | **1.0** | **VPN in Service Provider IP NGN Environments** |
| | 1.1 | Describe VPN implementation models (overlay, peer-to-peer) |
| | 1.2 | Describe VPN technologies (L2TPv3, GRE, IPsec VPN, SSLVPN, DMVPN, GETVPN) |
| | 1.3 | Describe L2 vs L3 VPNs |
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| **40%** | **2.0** | **MPLS layer 3 VPNs in Service Provider IP NGN Environments** |
| | 2.1 | Describe MPLS L3 VPN architecture and operations (RDs, RTs, VRFs, MP-BGP, PE-CE routing) |
| | 2.2 | Describe the design models for combining Internet access with MPLS L3 VPN services |
| | 2.3 | Describe the various methods used to deploy IPv6 over MPLS (6PE and 6VPE) |
| | 2.4 | Implement MP-BGP between PE routers on IOS-XR and IOS-XE |
| | 2.5 | Implement PE-CE routings (static, EIGRP, OSPF, BGP) on IOS-XR and IOS-XE |
| | 2.6 | Implement complex MPLS layer 3 VPNs on IOS-XR and IOS-XE |
| | 2.7 | Implement carrier supporting carrier (CSC) on IOS-XR and IOS-XE |
| | 2.8 | Troubleshoot MPLS L3 VPNs IOS-XR and IOS-XE configuration errors in service provider environments |
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| **19%** | **3.0** | **Layer 2 VPNs in Service Provider IP NGN Environments** |
| | 3.1 | Describe L2TPv3 VPNs over an IP core network |
| | 3.2 | Describe L2 VPNs (AToM and VPLS) over an IP/MPLS core network |
| | 3.3 | Describe AToM Interworking |
| | 3.4 | Implement AToM on IOS-XR and IOS-XE |
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| **26%** | **4.0** | **Carrier Ethernet in Service Provider IP NGN Environments** |
| | 4.1 | Describe Carrier Ethernet forums and standards (MEF, IEEE, IETF) |