



CCIE Service Provider Written Exam (350-029) version 3.0

Exam Description: The Cisco CCIE® Service Provider Written Exam (350-029) version 3.0 is a 2-hour test with 80–110 questions that will validate that professionals have the expertise to describe, implement, optimize, and troubleshoot complex service provider networks. 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.

- 46%** **1.0** **Describe, Implement, Optimize and Troubleshoot Core IP Technologies**
 - 1.1 Describe, implement, optimize, and troubleshoot packet over SONET
 - 1.2 Describe, implement, optimize, and troubleshoot IP over DWDM
 - 1.3 Describe, implement, optimize, and troubleshoot GE/10GE in the core
 - 1.4 Describe, implement, optimize, and troubleshoot SP high-end products
 - 1.5 Describe, implement, optimize, and troubleshoot IGP routing
 - 1.6 Describe, implement, optimize, and troubleshoot MPLS and LDP
 - 1.7 Describe, implement, optimize, and troubleshoot MPLS traffic engineering
 - 1.8 Describe, implement, optimize, and troubleshoot BGP
 - 1.9 Describe, implement, optimize, and troubleshoot multicast
 - 1.10 Describe, implement, optimize, and troubleshoot high availability
 - 1.11 Describe, implement, optimize, and troubleshoot convergence
 - 1.12 Describe, implement, optimize, and troubleshoot SP QoS
 - 1.13 Describe, implement, optimize, and troubleshoot security in the core

- 10%** **2.0** **Describe, Implement, Optimize, and Troubleshoot Access and Edge Connection Technologies**
 - 2.1 Describe, implement, optimize, and troubleshoot FE/GE and ethernet trunk connections
 - 2.2 Describe, implement, optimize, and troubleshoot PPP connections
 - 2.3 Describe, implement, optimize, and troubleshoot SONET/SDH connections
 - 2.4 Describe, implement, optimize, and troubleshoot frame relay connections
 - 2.5 Describe, implement, optimize, and troubleshoot ATM connections
 - 2.6 Describe, implement, optimize, and troubleshoot T1/T3 and E1/E3 services

- 3%** **3.0** **Describe, Implement, Optimize, and Troubleshoot Remote Access Technologies**
 - 3.1 Describe, implement, optimize, and troubleshoot IP over DSL to the customer
 - 3.2 Describe, implement, optimize, and troubleshoot IP over wire line to the customer
 - 3.3 Describe, implement, optimize, and troubleshoot IP over cable to the customer

- 24%** **4.0** **Describe, Implement, Optimize, and Troubleshoot L3VPN Technologies**
 - 4.1 Describe, implement, optimize, and troubleshoot Intra-AS L3VPN

- 4.2 Describe, implement, optimize, and troubleshoot Inter-AS L3VPN
- 4.3 Describe, implement, optimize, and troubleshoot CSC
- 4.4 Describe, implement, optimize, and troubleshoot L2TP for L3VPN
- 4.5 Describe, implement, optimize, and troubleshoot VPN extranet and Internet access
- 4.6 Describe, implement, optimize, and troubleshoot VRF service
- 4.7 Describe, implement, optimize, and troubleshoot multicast VPN
- 4.8 Describe, implement, optimize, and troubleshoot GRE L3VPN

- 10% 5.0 Describe, Implement, Optimize, and Troubleshoot L2VPN Technologies**
- 5.1 Describe, implement, optimize, and troubleshoot AToM
- 5.2 Describe, implement, optimize, and troubleshoot VPLS and carrier ethernet
- 5.3 Describe, implement, optimize, and troubleshoot L2TPv3 for L2 VPN
- 5.4 Describe, implement, optimize, and troubleshoot GRE L2VPN

- 3% 6.0 Describe, Implement, Optimize, and Troubleshoot Managed Services Traversing the Core**
- 6.1 Describe, implement, optimize, and troubleshoot managed voice and video services that traverse the core
- 6.2 Describe, implement, optimize, and troubleshoot managed security services that traverse the core
- 6.3 Describe, implement, optimize, and troubleshoot service level agreements for managed services that traverse the core

- 4% 7.0 Describe Service Provider Network Implementing Principles**
- 7.1 Given a service provider network design change or new service, identify the success criteria
- 7.2 Given a service provider network design change or new service, identify the appropriate routing protocol
- 7.3 Given a service provider network design change or new service, identify the appropriate tunneling protocol
- 7.4 Given a service provider network design change or new service, identify convergence method to use
- 7.5 Given a service provider network design change or new service, identify scalability method to use
- 7.6 Given a service provider network design change or new service, identify reliability method to use
- 7.7 Given a service provider network design change or new service, identify management method to use
- 7.8 Given a service provider network design change or new service, identify QoS method to use
- 7.9 Given a service provider network design change or new service, identify security method to use