300-101 ROUTE 考试

实施思科 IP 路由

考试编号:	300-101
相关认证:	CCNP 和 CCDP
时间:	120 分钟（45-55 个问题)
可选择语言:	英语
点击此处报名:	Pearson VUE
考试题型:	单选、多选、填空、拖图、Lab
考试费用：	$250USD

考试说明

ROUTE 300-101 考试证明通过的考生具备网络路由的知识和相关技能。他们有能力使用先进的 IP 寻址技术和路由技术实施可扩展的、高安全性的思科路由与局域网，广域网及 IPv6 的连接。

本考试还涵盖了为支持企业分支办公网络和移动网络工作环境配置高安全性路由解决方案。

考试要点

以下是实施 Cisco IP 路由(ROUTE 300-101)考试的主要内容和考点。然而，在考试的特定版本中也可能出现其他相关的考点。为了更好地反映考试内容并明确考试目的，下面的考试大纲可能在不发出通知的情况下随时调整。

考试说明：实施 Cisco IP 路由(ROUTE 300-101)是获得思科 CCNP 和 CCDP 认证需要通过的一项考试。考试时间为 120 分钟，包括 50-60 道考题。ROUTE 300-101 考试证明通过的考生具备网络路由的知识和相关技能。他们有能力使用先进的 IP 寻址技术和路由技术实施可扩展的、高安全性的思科路由与局域网，广域网及 IPv6 的连接。

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1.0 Network Principles	10%

  1.1 Identify Cisco Express Forwarding concepts
- 1.1.a FIB
- 1.1.b Adjacency table

  1.2 Explain general network challenges
- 1.2.a Unicast
- 1.2.b Out-of-order packets
- 1.2.c Asymmetric routing

  1.3 Describe IP operations
- 1.3.a ICMP Unreachable and Redirects
- 1.3.b IPv4 and IPv6 fragmentation
- 1.3.c TTL

  1.4 Explain TCP operations
- 1.4.a IPv4 and IPv6 (P)MTU
- 1.4.b MSS
- 1.4.c Latency
- 1.4.d Windowing
- 1.4.e Bandwidth-delay product
- 1.4.f Global synchronization

  1.5 Describe UDP operations
- 1.5.a Starvation
- 1.5.b Latency

  1.6 Recognize proposed changes to the network
- 1.6.a Changes to routing protocol parameters
- 1.6.b Migrate parts of the network to IPv6

- 1.6.c Routing protocol migration

2.0 Layer 2 Technologies   10%

2.1 Configure and verify PPP
- 2.1.a Authentication (PAP, CHAP)
- 2.1.b PPPoE (client side only)

2.2 Explain Frame Relay
- 2.2.a Operations
- 2.2.b Point-to-point
- 2.2.c Multipoint

3.0 Layer 3 Technologies   40%

3.1 Identify, configure, and verify IPv4 addressing and subnetting
- 3.1.a Address types (Unicast, broadcast, multicast, and VLSM)
- 3.1.b ARP
- 3.1.c DHCP relay and server
- 3.1.d DHCP protocol operations

3.2 Identify IPv6 addressing and subnetting
- 3.2.a Unicast
- 3.2.b EUI-64
- 3.2.c ND, RS/RA
- 3.2.d Autoconfig (SLAAC)
- 3.2.e DHCP relay and server
- 3.2.f DHCP protocol operations

3.3 Configure and verify static routing

3.4 Configure and verify default routing

3.5 Evaluate routing protocol types
- 3.5.a Distance vector
- 3.5.b Link state
- 3.5.c Path vector

3.6 Describe administrative distance

3.7 Troubleshoot passive interfaces

3.8 Configure and verify VRF lite

3.9 Configure and verify filtering with any protocol

3.10 Configure and verify redistribution between any routing protocols or routing sources

3.11 Configure and verify manual and autosummarization with any routing protocol

3.12 Configure and verify policy-based routing

3.13 Identify suboptimal routing

3.14 Explain ROUTE maps

3.15 Configure and verify loop prevention mechanisms
- 3.15.a Route tagging and filtering

- 3.15.b Split-horizon
- 3.15.c Route poisoning

3.16 Configure and verify RIPv2

3.17 Describe RIPng

3.18 Describe EIGRP packet types

3.19 Configure and verify EIGRP neighbor relationship and authentication

3.20 Configure and verify EIGRP stubs

3.21 Configure and verify EIGRP load balancing

- 3.21.a Equal cost
- 3.21.b Unequal cost

3.22 Describe and optimize EIGRP metrics

3.23 Configure and verify EIGRP for IPv6

3.24 Describe OSPF packet types

3.25 Configure and verify OSPF neighbor relationship and authentication

3.26 Configure and verify network types, area types, and router types

- 3.26.a Point-to-point, multipoint, broadcast, nonbroadcast
- 3.26.b LSA types, area type: backbone, normal, transit, stub, NSSA, totally stub
- 3.26.c Internal router, backbone router, ABR, ASBR
- 3.26.d Virtual link

3.27 Configure and verify OSPF path preference

3.28 Configure and verify OSPF operations

3.29 Configure and verify OSPF for IPv6

3.30 Describe, configure, and verify BGP peer relationships and authentication

- 3.30.a Peer group
- 3.30.b Active, passive
- 3.30.c States and timers

3.31 Configure and verify eBGP (IPv4 and IPv6 address families)

- 3.31.a eBGP
- 3.31.b 4-byte AS number
- 3.31.c Private AS

3.32 Explain BGP attributes and best-path selection

4.0 VPN Technologies	10%

4.1 Configure and verify GRE
4.2 Describe DMVPN (single hub)
4.3 Describe Easy Virtual Networking (EVN)

5.0 Infrastructure Security	10%

5.1 Describe IOS AAA using local database
5.2 Describe device security using IOS AAA with TACACS+ and RADIUS

- 5.2.a AAA with TACACS+ and RADIUS
- 5.2.b Local privilege authorization fallback

5.3 Configure and verify device access control

- 5.3.a Lines (VTY, AUX, console)
- 5.3.b Management plane protection
- 5.3.c Password encryption

5.4 Configure and verify router security features

- 5.4.a IPv4 access control lists (standard, extended, time-based)
- 5.4.b IPv6 traffic filter
- 5.4.c Unicast reverse path forwarding

6.0 Infrastructure Services	**20%**

6.1 Configure and verify device management

- 6.1.a Console and VTY
- 6.1.b Telnet, HTTP, HTTPS, SSH, SCP
- 6.1.c (T)FTP

6.2 Configure and verify SNMP

- 6.2.a v2
- 6.2.b v3

6.3 Configure and verify logging

- 6.3.a Local logging, syslog, debugs, conditional debugs
- 6.3.b Timestamps

6.4 Configure and verify Network Time Protocol (NTP)

- 6.4.a NTP master, client, version 3, version 4
- 6.4.b NTP authentication

6.5 Configure and verify IPv4 and IPv6 DHCP

- 6.5.a DHCP client, IOS DHCP server, DHCP relay
- 6.5.b DHCP options (describe)

6.6 Configure and verify IPv4 Network Address Translation (NAT)

- 6.6.a Static NAT, dynamic NAT, PAT

6.7 Describe IPv6 NAT

- 6.7.a NAT64
- 6.7.b NPTv6

6.8 Describe SLA architecture

6.9 Configure and verify IP SLA

- 6.9.a ICMP

6.10 Configure and verify tracking objects

- 6.10.a Tracking objects
- 6.10.b Tracking different entities (for example, interfaces, IPSLA results)

6.11 Configure and verify Cisco NetFlow

- 6.11.a NetFlow v5, v9
- 6.11.b Local retrieval
- 6.11.c Export (configuration only)