HCIE-Routing & Switching V3.0 考试大纲

华为认证 HCIE-Routing & Switching V3.0 认证考试

考试科目	HCIE-Routing & Switching (笔试)	HCIE-Routing & Switching (实验)
考试代码	H12-261	H12-266
考试语言	中/英	中/英
试题类型	判断题、单选题、多选题、填空题、拖拽题	操作题、论述题
考试费用	300USD	8000 CNY
考试时长	90min	480min
通过分数/总分	600/1000	80/100

考试内容

HCIE-Routing & Switching V3.0 考试覆盖对企业网络的规划、设计、实施、维护、排障、优化、割接等。

笔试&实验知识点占比

知识点		笔试占比	实验占比
Layer 2 Technologies	STP	12%	7%
	VLAN		
	Transparent bridge		
	Link Aggregation, Eth-Trunk and IP-Trunk, Load-balance, LACP		
	Ethernet technologies		
	Smart link		
	DLDP		
	Switched Port Analyzer (port-mirroring)		
	CSS/iStack		
	HDLC/IP-Trunk and PPP/MP		

	PPPoE		
IPv4/v6 Unicast	IPv4 addressing, subnetting, and VLSM	52%	32%
	IPv4 tunneling and GRE		
	IPv6 addressing		
	ICMPv6		
	IPv6 functionality protocols		
	Migration techniques		
	IPv4/v6 OSPF		
	IPv4/v6 IS-IS		
	IPv4/v6 BGP		
	Route Control		
MPLS VPN	MPLS	10%	13%
	MPLS Layer 3 VPN		
	Inter-AS MPLS VPN		
IPv4/v6 Multicast	IPv4/v6 Multicast	6%	4%
Network Security	Access lists	5%	2%
	uRPF		
	IP Source Guard		
	AAA		
	802.1x / NAC		
	NAT		
	Device access control		
	IPsec		
	Traffic Suppression		
	Local Attack Defense		
	IP Address Anti-spoofing		
	ARP Security		
	DHCP Security		
QoS	--	5%	3%
Network Management	--	2%	1%
Feature	--	3%	1%
SDN	--	5%	--
Planning/Troubleshoot a Network	--	--	37%

笔试知识点

一、Layer 2 Technologies

STP

1.STP

2.RSTP

3.MSTP

4.Loop guard

5.Root guard

6.BPDU guard

7.TC-BPDU attack guard

VLAN

1.Access port

2.Trunk port

3.Hybrid port

4.QinQ

5.Vlan Aggregation

6.Mux VLAN

7.Voice VLAN

Transparent bridge

1.Local Bridging

2.Remote Bridging

3.Integrated Bridging and Routing

4.VLAN ID Transparent Transmission

Link Aggregation, Eth-Trunk and IP-Trunk, Load-balance, LACP

1.Link Aggregation

2.LACP

Ethernet technologies

1.Speed and duplex

2.Ethernet, Fast Ethernet, Gigabit Ethernet, 10GE, 40GE,100GE

3.Auto MDI/MDIX

4.Auto negotiation

5.Storm control

6.Unicast flooding control

Smart link

DLDP

Switched Port Analyzer (port-mirroring)

CSS/iStack

HDLC/IP-Trunk and PPP/MP

PPPoE

二、IPv4/v6 Unicast

IPv4 addressing, subnetting, and VLSM

IPv4 tunneling and GRE

IPv6 addressing

ICMPv6

IPv6 functionality protocols

Migration techniques

1.Tunnelling techniques

2.Translation techniques

IPv4/v6 OSPF

1.Standard OSPF areas

2.Stub area

3.Totally stubby area

4.NSSA

5.Totally NSSA

6.LSA types

7.Adjacency on a point-to-point and on a multi-access network

8.Virtual-Link

9.LSA Filter

10.OSPF Fast Convergence

11.Stub Router

12.OSPF Authentication

IPv4/v6 IS-IS

1.NSAP

2.IS-IS Link-state packets

3.IS-IS area type

4.IS-IS circuit type

5.IS-IS TLV

6.IS-IS DIS and Pseudo node

7.IS-IS SPF

8.IS-IS LSP

9.IS-IS Metric

10.IS-IS Route Leaking

11.IS-IS MT

12.IS-IS Fast Convergence

13.IS-IS LDP Synchronization

14.IS-IS Authentication

IPv4/v6 BGP

1.IBGP and EBGP

2.BGP attributes

3.BGP synchronization

4.BGP routes Summarization

5.Route Dampening

6.BGP route reflector

7.BGP Community

8.BGP Peer Groups

9.BGP Security

10.Principles of Route Selection

Route Control

1.Filtering

2.IP Prefix list

3.Route Import(redistribution)

4.Route policy

5.Summarization

6.Preference

7.Other advanced features

三、MPLS VPN

MPLS

1.MPLS network component (P, PE, CE)

2.MPLS label format

3.MPLS label encapsulation

4.MPLS label stack

5.MPLS label operation

6.Forwarding Equivalence Class

7.LDP

8.Label advisement model

9.MPLS LDP—Local Label Allocation Filtering

10.MPLS LDP Inbound/outbound Label Binding Filtering

MPLS Layer 3 VPN

1.MP-IBGP VPNv4 peering

2.VPN-instance

3.Route Distinguisher

4.Route Target

5.Route Target import/export

6.PE-CE–Dynamic Routes

7.PE-CE–Static Routes

8.Redistributing PE-CE routes into VPNv4

9.Redistributing VPNv4 routes into PE-CE routing table

10.MCE

Inter-AS MPLS VPN

1.Option A

2.Option B

3.Option C

四、IPv4/v6 Multicast

1.Multicast distribution tree

2.Multicast forwarding

3.Multicast RPF

4.PIM sparse mode

5.IGMP/MLD

6.IGMP Snooping/MLD Snooping

7.PIM RP, and BSR

8.Multicast tools, features, and source-specific multicast

五、Network Security

Access lists

uRPF

IP Source Guard

AAA

802.1x / NAC

NAT

1.Static NAT/NAPT

2.Dynamic NAT/PAT

3.Easy IP

4.NAT Server

5.Twice NAT

6.ALG

7.NAT Mapping

8.NAT Filtering

Device access control

IPsec

Traffic Suppression

Local Attack Defense

IP Address Anti-spoofing

ARP Security

DHCP Security

六、QoS

1.Classification

2.Traffic Policing

3.Traffic Shaping

4.Congestion Avoidance

5.Congestion Management

七、Network Management

1.Syslog

2.IP Service Level Agreement SLA

3.NetStream

4.NQA

5.SNMP

6.FTP

7.Telnet

8.SSH

八、Feature

1.VRRP

2.VGMP

3.Interface Backup

4.NTP

5.DHCP

6.BFD

7.NSF/GR

8.NSR

九、SDN

1.Strategy of SDN/NFV

2.SDN architecture

3.VXLAN

4.EVPN

实验知识点

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4.NTP

5.DHCP

6.BFD

7.NSF/GR

8.NSR

九、Planning/Troubleshoot a Network

1.Planning/Troubleshoot complex Layer 2 network

2.Planning/Troubleshoot complex Layer 3 network

3.Planning/Troubleshoot a network in response to application

4.Planning/Troubleshoot network services

5.Planning/Troubleshoot network security

请注意：

该考试大纲是对考生在拥有多年实际工作经验的前提下进行备考时的补充，不代表 HCIE- Routing & Switching V3.0 考试中不能考查其他知识。该考试大纲代表了我们要求考生至少要掌握的知识，考生必须要能够熟练应用这些知识和相关知识点，才能通过 HCIE- Routing & Switching V3.0 的考核。我们欢迎得到您的建议和意见。您可以发送邮件给我们，Email:Certification@huawei.com

参考书籍

HCIE-Routing & Switching 培训教材 V3.0

HCIE-Routing & Switching 实验手册 V3.0

华为产品文档

推荐培训

HCIE-Routing & Switching 华为路由交换专家认证培训