CCIE ROUTING AND SWITCHING TRACK

The Routing and Switching written exam (#350-001) has approximately 100 multiple-choice questions and is two hours in duration. The topic areas listed are general guidelines for the type of content that is likely to appear on the exam

General Networking Theory

General Routing Concepts
Link State and Distance Vector Protocols
Split Horizon
Summarization
Classful and a Classless routing protocol
Routing decision criteria
Routing Information Base (RIB) and Routing Protocols Interaction
Administrative Distance
Routing Table
RIB and Forwarding Information Base interaction
Redistribution
Redistribution between routing
Troubleshooting routing loop

Bridging and LAN Switching

Spanning Tree Protocol (STP)
802.1d
802.1w
802.1s
Loopguard
Rootguard
Bridge Protocol Data Unit (BPDU) Guard
Storm Control
Rapid Spanning Tree Protocol (RSTP)
Unicast flooding
STP port roles, failure propagation and loopguard operation
LAN Switching
Trunks
VLAN Trunking Protocol (VTP) administrative functions
Ethernet
Speed
Duplex
Ethernet
Fast Ethernet
Gigabit Ethernet

IP

Addressing
Subnetting

Hot Standby Routing Protocol (HSRP)
Gateway Load Balancing Protocol (GLBP)
Virtual Router Redundancy Protocol (VRRP)
Network Address Translation (NAT)
Services
Network Time Protocol (NTP)
Dynamic Host Control Protocol (DHCP)
Web Cache Communication Protocol (WCCP)
Network Management
Logging and Syslog

IP Routing

OSPF
Standard OSPF area
Stub area
Totally stub area
Not-so-stubby-area (NSSA)
Totally NSSA
Link State Advertisement (LSA) types
Adjacency on a point-to-point and on a multi-access (broadcast)
OSPF graceful restart
Troubleshooting failing adjacency formation to fail
Troubleshooting of external route installation in the RIB

BGP

Protocol on which BGP peers communicate
Next Hop
Peering
Troubleshooting of BGP route that will not install in the routing table

EIGRP

Best path
Loop free paths
EIGRP operations when alternate loop free paths are available and when it is not available
EIGRP queries
Manual summarization
Auto-summarization
EIGRP Stubs
Troubleshooting of EIGRP neighbor adjacencies
Policy Routing
Concept of policy routing

QoS

Modular QoS command-line (MQC) applied to:
Network-Based Application Recognition (NBAR)
Class-based weighted fair queueing (CBWFQ) / Modified Deficit Round

Robin (MDRR)
Policing
Shaping
Marking
Random Early Detection (RED)

WAN

Frame Relay
Local Management Interface (LMI)
Traffic Shaping
HUB and Spoke routers
Dynamic Multipoint VPN (DMVPN)
DE

IP Multicast

Internet Group Management Protocol (IGMP) v2
Group addresses
Shared Trees
Source Trees
Protocol Independent Multicast (PIM) Mechanic
PIM Sparse Mode
Auto-RP
Anycast RP

Security

Extended IP access lists
Unicast Reverse Path Forwarding (uRPF)
IP Source Guard
Context Based Access Control (CBAC)

MPLS (New)

Label Switching Router (LSR)
Label Switched Path (LSP)
Route Descriptor
Label Format
Label imposition/disposition
Label Distribution

IPv6 (New)

IPv6 Addressing and types
IPv6 Neighbor Discovery
Basic IPv6 functionality protocols
IPv6 Multicast and related Multicast protocols
Tunneling Techniques
OSPFv3
EIGRPv6