



CCNA 200-125 (Routing & Switching)

Course Content

<p>1.0 Network Fundamentals</p> <p>1.1 Compare and contrast OSI and TCP/IP models</p> <p>1.2 Compare and contrast TCP and UDP protocols</p> <p>1.3 Describe the impact of infrastructure components in an enterprise network</p> <ul style="list-style-type: none"> • 1.3.a Firewalls • 1.3.b Access points • 1.3.c Wireless controllers <p>1.4 Describe the effects of cloud resources on enterprise network architecture</p> <ul style="list-style-type: none"> • 1.4.a Traffic path to internal and external cloud services • 1.4.b Virtual services • 1.4.c Basic virtual network infrastructure <p>1.5 Compare and contrast collapsed core and three-tier architectures</p> <p>1.6 Compare and contrast network topologies</p> <ul style="list-style-type: none"> • 1.6.a Star • 1.6.b Mesh • 1.6.c Hybrid <p>1.7 Select the appropriate cabling type based on implementation requirements</p> <p>1.8 Apply troubleshooting methodologies to resolve problems</p> <ul style="list-style-type: none"> • 1.8.a Perform and document fault isolation • 1.8.b Resolve or escalate • 1.8.c Verify and monitor resolution <p>1.9 Configure, verify, and troubleshoot IPv4 addressing and subnetting</p> <p>1.10 Compare and contrast IPv4 address types</p> <ul style="list-style-type: none"> • 1.10.a Unicast • 1.10.b Broadcast • 1.10.c Multicast <p>1.11 Describe the need for private IPv4 addressing</p> <p>1.12 Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment</p>	<p>3.11 Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)</p> <p>3.12 Configure, verify, and troubleshoot EIGRP for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub)</p> <p>3.13 Configure, verify, and troubleshoot RIPv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution)</p> <p>3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues</p> <p>4.0 WAN Technologies</p> <p>4.1 Configure and verify PPP and MLPPP on WAN interfaces using local authentication</p> <p>4.2 Configure, verify, and troubleshoot PPPoE client-side interfaces using local authentication</p> <p>4.3 Configure, verify, and troubleshoot GRE tunnel connectivity</p> <p>4.4 Describe WAN topology options</p> <ul style="list-style-type: none"> • 4.4.a Point-to-point • 4.4.b Hub and spoke • 4.4.c Full mesh • 4.4.d Single vs dual-homed <p>4.5 Describe WAN access connectivity options</p> <ul style="list-style-type: none"> • 4.5.a MPLS • 4.5.b Metro Ethernet • 4.5.c Broadband PPPoE • 4.5.d Internet VPN (DMVPN, site-to-site VPN, client VPN) <p>4.6 Configure and verify single-homed branch connectivity using eBGP IPv4 (limited to peering and route advertisement using Network command only)</p> <p>4.7 Describe basic QoS concepts</p> <ul style="list-style-type: none"> • 4.7.a Marking • 4.7.b Device trust • 4.7.c Prioritization <ul style="list-style-type: none"> ○ 4.7.c. [i] Voice ○ 4.7.c. [ii] Video ○ 4.7.c. [iii] Data • 4.7.d Shaping
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1.13 Configure, verify, and troubleshoot IPv6 addressing

1.14 Configure and verify IPv6 Stateless Address Auto Configuration

1.15 Compare and contrast IPv6 address types

- 1.15.a Global unicast
- 1.15.b Unique local
- 1.15.c Link local
- 1.15.d Multicast
- 1.15.e Modified EUI 64
- 1.15.f Autoconfiguration
- 1.15.g Anycast

2.0 LAN Switching Technologies

2.1 Describe and verify switching concepts

- 2.1.a MAC learning and aging
- 2.1.b Frame switching
- 2.1.c Frame flooding
- 2.1.d MAC address table

2.2 Interpret Ethernet frame format

2.3 Troubleshoot interface and cable issues (collisions, errors, duplex, speed)

2.4 Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches

- 2.4.a Access ports (data and voice)
- 2.4.b Default VLAN

2.5 Configure, verify, and troubleshoot interswitch connectivity

- 2.5.a Trunk ports
- 2.5.b Add and remove VLANs on a trunk
- 2.5.c DTP, VTP (v1&v2), and 802.1Q
- 2.5.d Native VLAN

2.6 Configure, verify, and troubleshoot STP protocols

- 2.6.a STP mode (PVST+ and RPVST+)
- 2.6.b STP root bridge selection

2.7 Configure, verify and troubleshoot STP related optional features

- 2.7.a PortFast
- 2.7.b BPDU guard

2.8 Configure and verify Layer 2 protocols

- 2.8.a Cisco Discovery Protocol
- 2.8.b LLDP

2.9 Configure, verify, and troubleshoot (Layer 2/Layer 3) EtherChannel

- 4.7.e Policing
- 4.7.f Congestion management

5.0 Infrastructure Services

5.1 Describe DNS lookup operation

5.2 Troubleshoot client connectivity issues involving DNS

5.3 Configure and verify DHCP on a router (excluding static reservations)

- 5.3.a Server
- 5.3.b Relay
- 5.3.c Client
- 5.3.d TFTP, DNS, and gateway options

5.4 Troubleshoot client- and router-based DHCP connectivity issues

5.5 Configure, verify, and troubleshoot basic HSRP

- 5.5.a Priority
- 5.5.b Preemption
- 5.5.c Version

5.6 Configure, verify, and troubleshoot inside source NAT

- 5.6.a Static
- 5.6.b Pool
- 5.6.c PAT

5.7 Configure and verify NTP operating in a client/server mode

6.0 Infrastructure Security

6.1 Configure, verify, and troubleshoot port security

- 6.1.a Static
- 6.1.b Dynamic
- 6.1.c Sticky
- 6.1.d Max MAC addresses
- 6.1.e Violation actions
- 6.1.f Err-disable recovery

6.2 Describe common access layer threat mitigation techniques

- 6.2.a 802.1x
- 6.2.b DHCP snooping
- 6.2.c Nondefault native VLAN

6.3 Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering

- 6.3.a Standard
- 6.3.b Extended

<ul style="list-style-type: none"> • 2.9.a Static • 2.9.b PAGP • 2.9.c LACP <p>2.10 Describe the benefits of switch stacking and chassis aggregation</p> <p>3.0 Routing Technologies</p> <p>3.1 Describe the routing concepts</p> <ul style="list-style-type: none"> • 3.1.a Packet handling along the path through a network • 3.1.b Forwarding decision based on route lookup • 3.1.c Frame rewrite <p>3.2 Interpret the components of a routing table</p> <ul style="list-style-type: none"> • 3.2.a Prefix • 3.2.b Network mask • 3.2.c Next hop • 3.2.d Routing protocol code • 3.2.e Administrative distance • 3.2.f Metric • 3.2.g Gateway of last resort <p>3.3 Describe how a routing table is populated by different routing information sources</p> <ul style="list-style-type: none"> • 3.3.a Admin distance <p>3.4 Configure, verify, and troubleshoot inter-VLAN routing</p> <ul style="list-style-type: none"> • 3.4.a Router on a stick • 3.4.b SVI <p>3.5 Compare and contrast static routing and dynamic routing</p> <p>3.6 Compare and contrast distance vector and link state routing protocols</p> <p>3.7 Compare and contrast interior and exterior routing protocols</p> <p>3.8 Configure, verify, and troubleshoot IPv4 and IPv6 static routing</p> <ul style="list-style-type: none"> • 3.8.a Default route • 3.8.b Network route • 3.8.c Host route • 3.8.d Floating static <p>3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)</p>	<ul style="list-style-type: none"> • 6.3.c Named <p>6.4 Verify ACLs using the APIC-EM Path Trace ACL analysis tool</p> <p>6.5 Configure, verify, and troubleshoot basic device hardening</p> <ul style="list-style-type: none"> • 6.5.a Local authentication • 6.5.b Secure password • 6.5.c Access to device <ul style="list-style-type: none"> ○ 6.5.c. [i] Source address ○ 6.5.c. [ii] Telnet/SSH • 6.5.d Login banner <p>6.6 Describe device security using AAA with TACACS+ and RADIUS</p> <p>7.0 Infrastructure Management</p> <p>7.1 Configure and verify device-monitoring protocols</p> <ul style="list-style-type: none"> • 7.1.a SNMPv2 • 7.1.b SNMPv3 • 7.1.c Syslog <p>7.2 Troubleshoot network connectivity issues using ICMP echo-based IP SLA</p> <p>7.3 Configure and verify device management</p> <ul style="list-style-type: none"> • 7.3.a Backup and restore device configuration • 7.3.b Using Cisco Discovery Protocol or LLDP for device discovery • 7.3.c Licensing • 7.3.d Logging • 7.3.e Timezone • 7.3.f Loopback <p>7.4 Configure and verify initial device configuration</p> <p>7.5 Perform device maintenance</p> <ul style="list-style-type: none"> • 7.5.a Cisco IOS upgrades and recovery (SCP, FTP, TFTP, and MD5 verify) • 7.5.b Password recovery and configuration register • 7.5.c File system management <p>7.6 Use Cisco IOS tools to troubleshoot and resolve problems</p> <ul style="list-style-type: none"> • 7.6.a Ping and traceroute with extended option • 7.6.b Terminal monitor • 7.6.c Log events • 7.6.d Local SPAN
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3.10 Configure, verify, and troubleshoot single area and multi-area OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)

7.7 Describe network programmability in enterprise network architecture

- 7.7.a Function of a controller
- 7.7.b Separation of control plane and data plane
- 7.7.c Northbound and southbound APIs

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