Interconnecting Cisco Networking Devices Part 1 (100-105)

Exam Description: The Interconnecting Cisco Networking Devices Part 1 (ICND1) exam (100-105) is a 90-minute, 45–55 question assessment that is associated with the Cisco Certified Entry Network Technician (CCENT) certification and is a tangible first step in achieving other associate-level certifications. This exam tests a candidate's knowledge and skills related to network fundamentals, LAN switching technologies, routing technologies, infrastructure services, and infrastructure maintenance.

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.

20%   1.0   Network Fundamentals

1.1   Compare and contrast OSI and TCP/IP models

1.2   Compare and contrast TCP and UDP protocols

1.3   Describe the impact of infrastructure components in an enterprise network
    1.3.a   Firewalls
    1.3.b   Access points
    1.3.c   Wireless controllers

1.4   Compare and contrast collapsed core and three-tier architectures

1.5   Compare and contrast network topologies
    1.5.a   Star
    1.5.b   Mesh
    1.5.c   Hybrid

1.6   Select the appropriate cabling type based on implementation requirements

1.7   Apply troubleshooting methodologies to resolve problems
    1.7.a   Perform fault isolation and document
    1.7.b   Resolve or escalate
    1.7.c   Verify and monitor resolution

1.8   Configure, verify, and troubleshoot IPv4 addressing and subnetting

1.9   Compare and contrast IPv4 address types
    1.9.a   Unicast
    1.9.b   Broadcast
    1.9.c   Multicast

1.10   Describe the need for private IPv4 addressing

1.11   Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment

1.12   Configure, verify, and troubleshoot IPv6 addressing

1.13   Configure and verify IPv6 Stateless Address Auto Configuration

1.14   Compare and contrast IPv6 address types
        1.14.a Global unicast
        1.14.b Unique local
        1.14.c Link local
        1.14.d Multicast
        1.14.e Modified EUI 64
        1.14.f Autoconfiguration
        1.14.g Anycast

26%   2.0   LAN Switching Fundamentals
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 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   802.1Q
        2.5.c   Native VLAN

2.6   Configure and verify Layer 2 protocols
        2.6.a   Cisco Discovery Protocol
        2.6.b   LLDP

2.7   Configure, verify, and troubleshoot port security
        2.7.a   Static
        2.7.b   Dynamic
        2.7.c   Sticky
        2.7.d   Max MAC addresses

		2.7.e	Violation actions
		2.7.f	Err-disable recovery

25% **3.0** **Routing Fundamentals**

3.1 Describe the routing concepts
- 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

3.2 Interpret the components of routing table
- 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

3.3 Describe how a routing table is populated by different routing information sources
- 3.3.a Admin distance

3.4 Configure, verify, and troubleshoot inter-VLAN routing
- 3.4.a Router on a stick

3.5 Compare and contrast static routing and dynamic routing

3.6 Configure, verify, and troubleshoot IPv4 and IPv6 static routing
- 3.6.a Default route
- 3.6.b Network route
- 3.6.c Host route
- 3.6.d Floating static

3.7 Configure, verify, and troubleshoot RIPv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution)

15% **4.0** **Infrastructure Services**

4.1 Describe DNS lookup operation

4.2 Troubleshoot client connectivity issues involving DNS

4.3 Configure and verify DHCP on a router (excluding static reservations)
- 4.3.a Server
- 4.3.b Relay
- 4.3.c Client
- 4.3.d TFTP, DNS, and gateway options

4.4 Troubleshoot client- and router-based DHCP connectivity issues

4.5   Configure and verify NTP operating in client/server mode

4.6   Configure, verify, and troubleshoot IPv4 standard numbered and named access list for routed interfaces

4.7   Configure, verify, and troubleshoot inside source NAT
        4.7.a   Static
        4.7.b   Pool
        4.7.c   PAT

14%   5.0   Infrastructure Maintenance
5.1   Configure and verify device-monitoring using syslog

5.2   Configure and verify device management
        5.2.a   Backup and restore device configuration
        5.2.b   Using Cisco Discovery Protocol and LLDP for device discovery
        5.2.c   Licensing
        5.2.d   Logging
        5.2.e   Timezone
        5.2.f   Loopback

5.3   Configure and verify initial device configuration

5.4   Configure, verify, and troubleshoot basic device hardening
        5.4.a   Local authentication
        5.4.b   Secure password
        5.4.c   Access to device
                5.4.c. (i)   Source address
                5.4.c. (ii) Telnet/SSH
        5.4.d   Login banner

5.5   Perform device maintenance
        5.5.a   Cisco IOS upgrades and recovery (SCP, FTP, TFTP, and MD5 verify)
        5.5.b   Password recovery and configuration register
        5.5.c   File system management

5.6   Use Cisco IOS tools to troubleshoot and resolve problems
        5.6.a   Ping and traceroute with extended option
        5.6.b   Terminal monitor
        5.6.c   Log events