CCNA Routing Switching

CCNA (200-120)

Operation of IP Data Networks

1) Recognize the purpose and functions of various network devices such as routers, switches, bridges and hubs
2) Select the components required to meet a given network specification
3) Identify common applications and their impact on the network
4) Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models
5) Predict the data flow between two hosts across a network
6) Identify the appropriate media, cables, ports, and connectors to connect Cisco network
7) Router hardware components and Boot process

IP Addressing (IPv4/IPv6)

1) Describe the operation and necessity of using private and public IP addresses for IPv4 addressing
2) Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment
3) Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment
4) Describe the technological requirements for running IPv6 in conjunction with IPv4 (dual stack)

Network Device Security

1) Device password security
2) Enable secret vs. enable
3) Configure and verify ACLs to filter network traffic

IP Routing Technologies

1) Describe basic routing concepts
2) Configure and verify utilizing the CLI to set basic Router configuration
   - hostname
   - local user and password
   - enable secret password
   - console & VTY logins
   - interface IP Address
3) Configure and verify operation status of a device interface
   ➢ Serial
   ➢ Ethernet

4) Verify router configuration and network connectivity using
   ➢ ping
   ➢ extended
   ➢ traceroute
   ➢ telnet

5) Configure and verify routing configuration for a static or default route given specific routing requirements

6) Differentiate methods of routing and routing protocols
   ➢ Static vs. dynamic
   ➢ Link state vs. distance vector
   ➢ Admin distance
   ➢ metric

7) Configure and verify EIGRP (single AS)

8) Configure and verify OSPF
   ➢ Benefit of single area
   ➢ Configure OSPv2
   ➢ Router ID
   ➢ Discuss multi-area OSPF

9) Configure and verify interVLAN routing (Router on a stick)
   ➢ sub interfaces
   ➢ encapsulation

**IP Services**

1) Configure and verify DHCP (IOS Router)

2) Configuring router interfaces to use DHCP

3) Excluded addresses

4) Describe the types, features, and applications of ACLs
   ➢ standard
   ➢ extended

5) Identify the basic operation of NAT

6) Configure and verify NAT OVERLOAD

7) Recognize High availability First Hop Redundancy Protocol (FHRP)
   ➢ VRRP
LAN Switching Technologies

1) Identify basic switching concepts and the operation of Cisco switches
2) Collision Domains
3) Broadcast Domains
4) Studying the concept of Access links and trunk links
5) Configure and verify Spanning Tree Protocol (STP)
6) Studying the Configuration and concept of VLANs
7) Studying the Configuration and concept of VTP
8) Identify enhanced switching technologies
9) Etherchannels

WAN Technologies

1) Discuss different WAN topologies
2) Identify different WAN Technologies
   - DSL
   - Frame relay
   - Cable
3) Configure and verify a basic WAN serial connection
4) Configure and verify a PPP connection between Cisco routers
5) Implement an authentication protocol of PPP
6) Configure and verify frame relay on Cisco routers