

# CCNA SYLLABUS

## 1. Operation of IP Data Networks:

- Operation of IP Data Networks
- Recognize the purpose and functions of various network devices such as Routers, Switches, Bridges and Hubs.
- Select the components required to meet a given network specification.
- Identify common applications and their impact on the network
- Describe the purpose and basic operation of the protocols in the OSI and TCP/IP models.
- Predict the data flow between two hosts across a network.
- Identify the appropriate media, cables, ports, and connectors to connect Cisco network devices to other network devices and hosts in a LAN

## 2. LAN Switching Technologies:

- Determine the technology and media access control method for Ethernet networks.
- Identify basic switching concepts and the operation of Cisco switches.
- Configure and verify initial switch configuration including remote access management.
- Verify network status and switch operation using basic utilities such as ping, telnet and ssh.
- Identify enhanced switching technologies
- Describe how VLANs create logically separate networks and the need for routing between them.
- Configure and verify VLANs
- Configure and verify trunking on Cisco switches
- Configure and verify STP operation

## 3. IP addressing (IPv4 / IPv6):

- Describe the operation and necessity of using private and public IP addresses for IPv4 addressing
- Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/ WAN environment.
- Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment.
- Describe the technological requirements for running IPv6 in conjunction with IPv4 such as dual stack
- Describe IPv6 addresses

## 4. IP Routing Technologies:

- Describe basic routing concepts
- Describe the boot process of Cisco IOS routers

- Configure and verify utilizing the CLI to set basic Router configuration
- Configure and verify operation status of a device interface, both serial and ethernet
- Verify router configuration and network connectivity
- Configure and verify routing configuration for a static or default route given specific routing requirements
- Manage Cisco IOS Files
- Differentiate methods of routing and routing protocols
- Configure and verify OSPF (single area)
- Configure and verify EIGRP (single AS)
- Configure and verify inter VLAN routing (Router on a stick)
- Configure SVI interfaces

#### 5. IP Services:

- Configure and verify DHCP (IOS Router)
- Describe the types, features, and applications of ACLs
- Configure and verify ACLs in a network environment
- Identify the basic operation of NAT
- Configure and verify NAT for given network requirements
- Configure and verify NTP as a client Recognize High availability (FHRP)
- Configure and verify Syslog Describe SNMP v2 & v3

#### 6. Network Device Security:

- Configure and verify network device security features
- Configure and verify Switch Port Security features
- Configure and verify ACLs to filter network traffic
- Configure and verify an ACLs to limit telnet and SSH access to the router

#### 7. WAN Technologies:

- Identify different WAN Technologies
- Configure and verify a basic WAN serial connection
- Configure and verify a PPP connection between Cisco routers
- Configure and verify Frame Relay on Cisco routers
- Implement and troubleshoot PPPoE