

# Networking (CCNA)

## Module 1: Network Fundamentals

- Introduction to the OSI Model
- Introduction to IPv4 (Internet Protocol)
- IPv4 Packet Header
- Address Resolution Protocol (ARP)
- Introduction to TCP and UDP
- TCP Header
- TCP Window Size Scaling
- Introduction to ICMP
- Introduction to DNS
- Introduction to Cisco Command Line Interface (CLI)
- User mode and Privileged mode

## Module 2: Network Access

### 2.1 VLANs and Trunks

- Introduction to VLANs
- How to configure VLANs
- VLAN Trunking Protocol (VTP)
- Introduction to 802.1Q
- How to configure a Trunk
- Dynamic Trunking Protocol (DTP)
- 802.1Q Native VLAN
- Introduction to Voice VLAN
- Etherchannels
- L3 Etherchannel

### 2.2 Spanning-Tree

- Introduction to Spanning-Tree
- Per VLAN Spanning-Tree
- Spanning-Tree Port States
- Spanning-Tree Cost Calculation
- Spanning-Tree Portfast
- Rapid PVST
- Rapid PVST Configuration

### 2.3 Wireless

- Introduction to Wireless Networks
- Introduction to Wireless LANs
- Wireless LAN 802.11 Service Sets
- Introduction to Wireless Security
- Wireless Authentication Methods
- Wireless Encryption and Integrity
- Wi-Fi Protected Access (WPA)
- Cisco Wireless Network Architectures
- Cisco WLC Deployment Models
- Cisco Wireless AP Modes
- Cisco Wireless LAN Controller (WLC)
- Basic Configuration
- Cisco WLC WPA2 PSK Authentication

## Module 3: IP Connectivity

### 3.1 Introduction

- Introduction to Routers and Routing
- Cisco IOS Router Basic Configuration
- Introduction to Wide Area Networks (WAN)

### 3.2 IPv4 Subnetting

- Introduction to Subnetting
- Basics of Binary Numbers
- Subnetting in Binary
- Subnetting in Decimal (Fast Method)
- Classless Inter-Domain Routing (CIDR)
- Variable Length Subnet Mask (VLSM)
- Route Summarization
- Hexadecimal to Binary and Decimal Conversion
- Create a Subnetting Cheat Sheet



### 3.3 IPv6

- Introduction to IPv6
- Shortening IPv6 Addresses
- How to find IPv6 Prefix
- IPv6 Address Types
- IPv6 Address Assignment Example
- IPv6 EUI-64
- IPv6 Summarization
- IPv6 Solicited Node Multicast Address
- IPv6 Neighbor Discovery Protocol (NDP)
- IPv6 Stateless Auto configuration

### 3.5 OSPF (Open Shortest Path First)

- Introduction to OSPF
- OSPF Configuration
- OSPF Packets and Neighbor Discovery
- OSPF Reference Bandwidth
- OSPF Router ID
- OSPF DR/BDR Election
- OSPF Passive Interface
- OSPF Hello and Dead Interval

### 3.4 Routing

- Default Gateway
- Static Routing
- IPv6 Static Route
- IP Routing Explained
- Router on a Stick
- Inter VLAN Routing
- Administrative Distance
- Floating Static Route
- Introduction to Route Summarization

### 3.6 Gateway Redundancy

- Introduction to Gateway Redundancy

## Module 4: IP Services

### 4.1 DHCP (Dynamic Host Configuration Protocol)

- Introduction to DHCP
- DHCP Server Configuration
- DHCP Relay Agent
- DHCP Client
- DHCP Server IPv6 Configuration

### 4.2 NAT (Network Address Translation)

- Introduction to NAT and PAT
- NAT Static
- NAT Dynamic
- Port Address Translation (PAT)

## Module 5: Security Fundamentals

### 5.1 Access-Lists

- Introduction to Access-Lists
- Wildcard Bits
- Standard Access-List
- Extended Access-List
- Time-based Access-List

### 5.2 Security Analysis

- Port-Security
- DHCP Snooping
- Introduction to Firewalls
- Introduction to VPNs

## Module 6: Network Management

### 6.1 Management Protocols

- Introduction to CDP
- Introduction to LLDP
- Telnet Server and Client
- SSH Server and Client

- Introduction to NTP
- Introduction to Syslog
- Configuration Register
- Password Recovery on Cisco IOS
- Cisco IOS File System
- Upgrade Cisco IOS Image



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## Hardware & ITSM and Security Session

### Hardware (Desktop)

- Desktop Hardware Introduction
- Assembly and Disassembly of Desktop CPU
- Basic Troubleshooting for Desktop (No Power, No Display, No Network & Audio and other peripherals)

### Operating System

- Bootable Media Creation
- OS Installation
- Storage Introduction
- OS Troubleshooting

### ITSM (Information Technology Service Management)

- ITSM Introduction
- Key Points of ITSM
- SLA

### Hardware (Laptop)

- Laptop Hardware Introduction
- Assembly and Disassembly of Laptop CPU
- Basic Troubleshooting for Laptop (No Power, No Display, No Network & Audio and other peripherals)

### Basic Software Installation & Printer

- Outlook Configuration and Troubleshooting
- MS teams Setup
- Basic Software installation (One by one & One to Many)
- Printer Installation & Troubleshooting

### Firewall

- Overview of Firewall
- Initial Setup of Firewall
- Interface configuration
- SDWAN overview
- Policy Creation
- Firewall Backup & Restore
- VPN introduction



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