

Course Schedule

Unit 1: Introduction

- How to study for CCNA
- How to study Networking
- How to build a CCNA Lab
- What is Networking

Unit 2: 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

Unit 3: Network Access

3.1 LAN

- Introduction to LANs
- Introduction to Ethernet
- Collision Domains
- Broadcast Domains

- How a switch learns MAC addresses
- Power over Ethernet (PoE)
- Network Topologies
- Troubleshooting Interfaces

3.2 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
- Troubleshooting VLANs and Trunks
- Etherchannels
- L3 Etherchannel

3.3 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
- Spanning-Tree BPDUGuard

3.4 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

Unit 4: IP Connectivity

4.1 Introduction

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

4.2 IPv4 Subnetting

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

4.3 Routing

- Default Gateway
- Static Routing
- Floating Static Route
- IP Routing Explained
- Router on a Stick
- InterVLAN Routing
- Traceroute
- Administrative Distance
- Introduction to Route Summarization

4.4 OSPF

- 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
- OSPF Multi-Area
- OSPF Default Route
- Troubleshoot OSPF Neighbor Adjacency

4.5 Gateway Redundancy

- Introduction to Gateway Redundancy

Unit 5: IP Services

5.1 DHCP

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

5.2 SNMP

- Introduction to SNMP
- SNMPv2
- SNMPv3

5.3 NAT

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

5.4 Quality of Service (QoS)

- Introduction to Quality of Service (QoS)
- IP Precedence and DSCP Values
- Classification
- Marking
- QoS Trust Boundary
- Shaping
- Policing
- Weighted Random Early Detection (WRED)

Unit 6: 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 Autoconfiguration
- IPv6 Static Route
- DHCP Server IPv6 Configuration

Unit 8: Network Management

- 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 Filesystem
- Upgrade Cisco IOS Image

Unit 9: Network Design

- Cisco Campus Network Design
- Spine and Leaf Architecture

Unit 10: Automation and Programmability

- Introduction to Software Defined Networking (SDN)
- Introduction to SDN OpenDaylight
- Device Programmability
- REST API
- Data Models and Structures
- Configuration Management Tools and Version Control Systems
- Introduction to SD-Access

Unit 11: Cloud Computing

- Virtual Machines and Containers
- Introduction to Cloud Computing
- Cloud Connectivity