



VERSION

2018

PROFESSIONAL

ACADEMY
CCNA-
IMPLEMENTING &
ADMINISTERING
CISCO SOLUTIONS
(200-301)
COURSE

**ELYSIUM
ACADEMY**

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IMPLEMENTING &
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CISCO SOLUTIONS
(200-301)
COURSE**

SR. CODE

EAPL/PROF/PRTC16

COURSE CODE

EAPNA

SUB CATEGORY

CYBER SECURITY AND
NETWORKING



TOTAL DURATION

90
HOURS



THEORY TAKEN

25
HOURS



PRACTICAL TAKEN

65
HOURS

COURSE DESCRIPTION



This course covers everything in CCNA 1.0 200-301. You will learn the basics of networking, how to configure a small network with Cisco routers and switches and more. Create simple LANs, perform basic router and switch configurations, and deploy IPv4 and IPv6 addresses. Configure routers, switches, and endpoints to allow access to local and remote network resources and end-to-end connections between remote devices.

COURSE GOALS



The Implementing and Administering Cisco Solutions (CCNA) v2.0 training gives you a broad range of fundamental knowledge for all IT careers. Through a combination of lecture, hands-on labs, and self-study, you will learn how to install, operate, configure, and verify basic IPv4 and IPv6 networks.

FUTURE SCOPE



The internet industry is growing. Software-based networking and the cloud are two emerging technologies. These technologies will have a major impact on the networking industry, creating new job opportunities. CCNA certifications are great for new IT roles.

01

CHAPTER

GETTING STARTED

01. Introduction

- a. What is CCNA ?
- b. Purpose of CCNA?
- c. How to link CCNA in Networking
- d. How to build CCNA lab
- e. Installation and setup

02. Roles and function of network components

- a. What is Network?
- b. Network types
- c. Internet and DNS Server
- d. Routers
- e. Hub
- f. Switches
- g. Cabling
- h. Firewalls and IPS
- i. Access points
- j. Controllers (Cisco DNA Center & WLC)
- k. End Points
- l. Servers

03. Network topologies

- a. 2 tier and 3 tier
- b. Spine and leaf
- c. WAN
- d. SoHo (Small office/home office)
- e. On- premise & Cloud Based N/W



O4. Physical Interface and cabling

- a. Compare Physical interface & cabling
- b. Single mode fiber
- c. Multi-mode fiber
- d. Copper
- e. Connections
- f. Ethernet shared media

O5. Identify interface and cable issues

- a. Collisions
- b. Errors
- c. Mismatch
- d. Duplex and/or speed
- e. Wireless Principles

02

CHAPTER

IP ADDRESSING

O1. IPV4 Addressing

- a. IP addressing
- b. IP Address classes
- c. Private and public IPS
- d. Sub netting and classes
- e. Super netting
- f. Super netting examples

O2. IPV6 Addressing

- a. IPV6 Addressing
- b. IPV6 Addressing types unicast (global, unique & link local)
- c. Any cast



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- d.Multicast
- e. Multicast
- f. Modified EUI64

O3. Verify IP parameters for client OS (Windows, Mac OS, Linux)

O4. Compare TCP to UDP

O5. Describe wireless principles

- a. Non overlapping Wi-Fi channels
- b. SSID
- c. RF
- d. Encryption

O6. Describe Switching concepts

- a. MAC learning & aging
- b. Frame Switching
- c. Frame flooding
- d. MAC Address table

03

CHAPTER

NETWORK ACCESS

O1. Configure and verify VLANs (normal range)

- a. Spanning multiple switches
- b. Access ports (data and voice)
- c. Default VLAN
- d. Inter VLAN Connectivity

O2. Configure and Verify interswitch connectivity

- a. Trunk ports
- b. 802.1Q
- c. Native VLAN

O3. Configure and verify Layer 2 discovery protocols (Cisco Discovery protocol and LLDP)

- a. Trunk ports
- b. 802.1Q
- c. Native VLAN

O4. Configure and verify (Layer 2/ Layer 3) Ether channel (LACP)

O5. Describe the need for and basic operations of Rapid PVST + Spanning Tree Protocol and Identify basic operations

- a. Root port, root bridge (primary/ Secondary) and other port names
- b. Port states (Forwarding/ blocking)
- c. Port fast benefits



- O6. Compare Cisco Wireless Architecture and AP modes**
- O7. Describe physical infrastructure connections of WLANS Components (AP, WLC, access/trunk Ports and LAG)**
- O8. Describe AP and WLC management access components (Telnet, SSH, HTTP, HTTPS, Console and TACACS + /RADIUS)**
- O9. Configure the components of a wireless LAN access for client connectivity using GUI only such as WLAN creation, Security settings, QOS profiles and advanced WLAN Settings**

04

CHAPTER

IP CONNECTIVITY

- O1. Interpret the components of routing table**
 - a. Routing protocol code
 - b. Prefix
 - c. Network mask
 - d. Next hop
 - e. Administrative distance
 - f. Metric
 - g. Gateway of last resort



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O2. Determine how a router makes a forwarding decision by default

- a. Longest match
- b. Administrative distance
- c. Routing protocol metric

O3. Configure and verify IPv4 and IPv6 static routing

- a. Default route
- b. Network route
- c. Host route
- d. Floating static

O4. Configure and verify single area OSPFv2

- a. Neighbor adjacencies
- b. Point-to-Point
- c. Broadcast (DR/BDR selection)
- d. Router ID

O5. Describe the purpose , function , and concepts of first hop redundancy protocols

05

CHAPTER

IP SERVICES

O1. Configure and verify inside source NAT using static and pools

- a. What is NAT
- b. Dynamic NAT
- c. Static NAT
- d. Dynamic PAT
- e. Static PAT

O2. Configure and verify NTP operating in a client and server mode

- a. Network Time Protocol (NTP)
- b. Network Time Protocol Lab

O3. Explain the role of DHCP and DNS within Network

- a. DHCP server
- b. Configuring a Router as a DHCP Server
- c. Configuring a Router as a HTTP-HTTPS Server
- d. Configuring a Router as a DNS Server
- e. Hands on DHCP

O4. Explain the function of SNMP in network operations

- a. About SNMP
- b. SNMPv2
- c. SNMPv3



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- O5. Describe the use of syslog features including facilities and levels**
- O6. Configure and verify DHCP client and relay**
 - a. Configure a Router as a DHCP Relay Agent
- O7. Explain the forwarding per-hop behavior (PHB) for QoS such as classification, marking, queuing, congestion, policing, shaping**
 - a. Qos – Policing
 - b. Qos – bandwidth Reservation & Prioritization
- O8. Configure network devices for remote access using SSH**
- O9. Describe the capabilities and function of TFTP/FTP in the network**

06

CHAPTER

SECURITY FUNDAMENTAL

- O1. Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)**
- O2. Describe security program elements (user awareness, training and physical access control)**
- O3. Configure and verify device access control using local passwords**



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- O4. Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)**
- O5. Describe IPsec remote access and site – to –site VPNs**
- O6. Configure and verify access control lists**
- O7. Configure Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)**
- O8. Differentiate authentication, authorization, and accounting concepts**
- O9. Describe wireless security protocols (WPA, WPA2, and WPA3)**
- 10. Configure WLAN using WPA2 PSK using the GUI**

07

CHAPTER

AUTOMATION AND PROGRAMMABILITY

- O1.Explain how automation impacts network management**
- O2.Compare traditional networks with controller-based networking**
- O3.Describe controller-based and software defined architectures (Overlay, Underlay and fabric)**
 - a. Separation of control plane and data plane
 - b. North-bound and south – bound APIs
- O4.Compare traditional campus device management with Cisco DNA Center enabled device management**
- O5.Describe characteristics of REST – based APIs (CRUD,HTTP verbs , and data encoding)**
- O6.Recognize the capabilities of configuration management mechanisms Puppet, Chef and Ansible**
- O7.Interpret JSON encoded data**



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08

CHAPTER

CHAPTER 8

01. Cloud Computing

- a. Defined cloud computing
- b. Cloud Service Models
- c. Cloud Computing Advantages
- d. Server Virtualization
- e. Virtual Network Devices



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Placement Assistance

100%

135+ Professional Courses

Practical Sessions

90%

67+ Global Pacts

Corporate Placements

65%

170+ IT Companies Tie-Up

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