

# Implementing and Administering Cisco Solutions (CCNA) v1.0

Exam Number: 200-301

مدت دوره : ۶۰ ساعت

پیش نیاز: : Network+

خلاصه:

درس CCNA بر فراهم آوردن دانش و مهارت لازم برای نصب و راه اندازی، کاربری و عیب یابی شبکه های با سایز کوچک تا متوسط شامل انجام تنظیمات روی سوئیچ های سیسکو، روتر های سیسکو و اتصال به شبکه با گستردگی جغرافیائی زیاد (WAN) و همچنین پیاده سازی امنیت در شبکه تمرکز دارد.

**اهداف دوره:** در انتهای این دوره دانشجویان قادر خواهند بود:

- Identify the components of a computer network and describe their basic characteristics
- Understand the model of host-to-host communication
- Describe the features and functions of the Cisco Internetwork Operating System (IOS®) software
- Describe LANs and the role of switches within LANs
- Describe Ethernet as the network access layer of TCP/IP and describe the operation of switches
- Install a switch and perform the initial configuration
- Describe the TCP/IP Internet layer, IPv4, its addressing scheme, and subnetting
- Describe the TCP/IP Transport layer and Application layer
- Explore functions of routing
- Implement basic configuration on a Cisco router
- Explain host-to-host communications across switches and routers
- Identify and resolve common switched network issues and common problems associated with IPv4 addressing
- Describe IPv6 main features and addresses, and configure and verify basic IPv6 connectivity
- Describe the operation, benefits, and limitations of static routing
- Describe, implement, and verify Virtual Local Area Networks (VLANs) and trunks
- Describe the application and configuration of inter-VLAN routing
- Explain the basics of dynamic routing protocols and describe components and terms of Open Shortest Path First (OSPF)
- Explain how Spanning Tree Protocol (STP) and Rapid Spanning Tree Protocol (RSTP) work

- Configure link aggregation using EtherChannel
- Describe the purpose of Layer 3 redundancy protocols
- Describe basic WAN and VPN concepts
- Describe the operation of Access Control Lists (ACLs) and their applications in the network
- Configure Internet access using Dynamic Host Configuration Protocol (DHCP) clients and explain and configure Network Address Translation (NAT) on Cisco routers
- Describe basic Quality of Service (QoS) concepts
- Describe the concepts of wireless networks, which types of wireless networks can be built, and how to use Wireless LAN Controllers (WLCs)
- Describe network and device architectures and introduce virtualization
- Introduce the concept of network programmability and Software-Defined Networking (SDN) and describe smart network management solutions such as Cisco DNA Center™, Software-Defined Access (SD-Access), and Software-Defined Wide Area Network (SD-WAN)
- Configure basic IOS system monitoring tools
- Describe the management of Cisco devices
- Describe the current security threat landscape
- Describe threat defense technologies
- Implement a basic security configuration of the device management plane
- Implement basic steps to harden network devices

## سرفصل دوره:

- **Exploring the Functions of Networking**
- **Introducing the Host-to-Host Communications Model**
- **Operating Cisco IOS Software**
- **Introducing LANs**
- **Exploring the TCP/IP Link Layer**
- **Starting a Switch**
- **Introducing the TCP/IP Internet Layer, IPv4 Addressing, and Subnets**
- **Explaining the TCP/IP Transport Layer and Application Layer**
- **Exploring the Functions of Routing**
- **Configuring a Cisco Router**
- **Exploring the Packet Delivery Process**
- **Troubleshooting a Simple Network**

- **Introducing Basic IPv6**
- **Configuring Static Routing**
- **Implementing VLANs and Trunks**
- **Routing Between VLANs**
- **Introducing OSPF**
- **Building Redundant Switched Topologies**
- **Improving Redundant Switched Topologies with EtherChannel**
- **Exploring Layer 3 Redundancy**
- **Introducing WAN Technologies**
- **Explaining Basics of ACL**
- **Enabling Internet Connectivity**
- **Introducing QoS**
- **Explaining Wireless Fundamentals**
- **Introducing Architectures and Virtualization**
- **Explaining the Evolution of Intelligent Networks**
- **Introducing System Monitoring**
- **Managing Cisco Devices**
- **Examining the Security Threat Landscape**
- **Implementing Threat Defense Technologies**
- **Securing Administrative Access**
- **Implementing Device Hardening**

#### **Lab outline**

- Get Started with Cisco Command-Line Interface (CLI)
- Observe How a Switch Operates
- Perform Basic Switch Configuration
- Implement the Initial Switch Configuration
- Inspect TCP/IP Applications
- Configure an Interface on a Cisco Router
- Configure and Verify Layer 2 Discovery Protocols
- Implement an Initial Router Configuration
- Configure Default Gateway

- Explore Packet Forwarding
- Troubleshoot Switch Media and Port Issues
- Troubleshoot Port Duplex Issues
- Configure Basic IPv6 Connectivity
- Configure and Verify IPv4 Static Routes
- Configure IPv6 Static Routes
- Implement IPv4 Static Routing
- Implement IPv6 Static Routing
- Configure VLAN and Trunk
- Troubleshoot VLANs and Trunk
- Configure a Router on a Stick
- Implement Multiple VLANs and Basic Routing Between the VLANs
- Configure and Verify Single-Area OSPF
- Configure and Verify EtherChannel
- Improve Redundant Switched Topologies with EtherChannel
- Configure and Verify IPv4 ACLs
- Implement Numbered and Named IPv4 ACLs
- Configure a Provider-Assigned IPv4 Address
- Configure Static NAT
- Configure Dynamic NAT and Port Address Translation (PAT)
- Implement PAT
- Log into the WLC
- Monitor the WLC
- Configure a Dynamic (VLAN) Interface
- Configure a DHCP Scope
- Configure a WLAN
- Define a Remote Access Dial-In User Service (RADIUS) Server
- Explore Management Options
- Explore the Cisco DNA™ Center
- Configure and Verify NTP
- Configure System Message Logging
- Create the Cisco IOS Image Backup

- Upgrade Cisco IOS Image
- Configure WLAN Using Wi-Fi Protected Access 2 (WPA2) Pre-Shared Key (PSK) Using the GUI
- Secure Console and Remote Access
- Enable and Limit Remote Access Connectivity
- Secure Device Administrative Access
- Configure and Verify Port Security
- Implement Device Hardening