Implementing and Administering Cisco Solutions (CCNA) v1.0

What you'll learn in this course

The **Implementing and Administering Cisco Solutions** (CCNA) v1.0 course 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. The course covers configuring network components such as switches, routers, and wireless LAN controllers; managing network devices; and identifying basic security threats. The course also gives you a foundation in network programmability, automation, and software-defined networking.

This course helps you prepare to take the **200-301 Cisco® Certified Network Associate** (CCNA®) exam. By passing this one exam, you earn CCNA certification. The **200-301 CCNA** exam goes live on February 24, 2020.

Course duration

- Instructor-led training: 5 days in the classroom and 3 days of self-study
- Virtual instructor-led training: Equivalent of 5 days of classroom instruction and 3 days of self-study
- E-learning: Equivalent of 8 days of classroom instruction

How you'll benefit

This course will help you:

- Learn the knowledge and skills to install, configure, and operate a small- to medium-sized network
- Gain a foundation in the essentials of networking, security, and automation
- Prepare for the **200-301 CCNA** exam, which earns CCNA certification

What to expect in the exam

The **200-301 CCNA** exam certifies your knowledge and skills related to network fundamentals, network access, IP connectivity, IP services, security fundamentals, and automation and programmability.

After you pass **200-301 CCNA**, you earn CCNA certification.

Who should enroll

This course is designed for anyone seeking CCNA certification. The course also provides foundational knowledge for all support technicians involved in the basic installation, operation, and verification of Cisco networks.

The job roles best suited to the material in this course are:

- Entry-level network engineer
- Network administrator
- Network support technician
- Help desk technician

How to enroll

- For instructor-led training, visit the Cisco Learning Locator.

- For private group training, visit Cisco Private Group Training.

- For individual e-learning, visit the Cisco Learning Network Store.

- For digital library access, visit Cisco Platinum Learning Library.

- For other way to purchase e-learning, contact us at learning-bdm@cisco.com.

Technology areas

- Networking

- Security

- Automation

Course details

Objectives

After taking this course, you should be able to:

- 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

Prerequisites

Before taking this course, you should have:

- Basic computer literacy
- Basic PC operating system navigation skills
- Basic Internet usage skills
- Basic IP address knowledge

There are no formal prerequisites for CCNA certification, but you should make sure to have a good understanding of the exam topics.

Outline

This class includes lecture sections and some self-study sections. In instructor-led classes, lectures are delivered in real-time, either in person or via video conferencing. In e-learning classes, the lectures are on recorded videos.

Section title	Learning mode
Exploring the Functions of Networking	Lecture
Introducing the Host-to-Host Communications Model	Lecture
Operating Cisco IOS Software	Lecture
Introducing LANs	Lecture
Exploring the TCP/IP Link Layer	Lecture
Starting a Switch	Lecture
Introducing the TCP/IP Internet Layer, IPv4 Addressing, and Subnets	Lecture
Explaining the TCP/IP Transport Layer and Application Layer	Lecture
Exploring the Functions of Routing	Lecture
Configuring a Cisco Router	Lecture
Exploring the Packet Delivery Process	Lecture
Troubleshooting a Simple Network	Lecture
Introducing Basic IPv6	Lecture
Configuring Static Routing	Lecture

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

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

Course content is dynamic and subject to change without notice.

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