Implementing and Administering Cisco Solutions (CCNA) v2.1

Course Description

Implementing and Administering Cisco Solutions (CCNA) v2.1 training teaches you how to install, operate, configure, and verify a basic IPv4 and IPv6 network, configure network components, such as switches, routers, and wireless local area network (LAN) controllers (WLNs), manage network devices, and identify basic security threats. This training also covers the introduction of AI and machine learning (ML) in network operations.

This training prepares you for the Cisco Certified Network Associate (200-301 CCNA) v1.1 exam. If passed, you earn the CCNA certification. This training also earns you 30 Continuing Education (CE) credits towards recertification.

How You'll Benefit

This training 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 v1.1 exam
- Earn 30 CE credits toward recertification

Who Should Enroll

- Entry-level Network Engineers
- Entry-level Network Administrators
- Entry-level Network Support Technicians
- Entry-level Help Desk Technicians

What to Expect in the Exam

Cisco Certified Network Associate (200-301 CCNA) v1.1 is a 120-minute exam associated with the CCNA certification.
The exam tests your knowledge and skills related to:

- Network fundamentals
- Network access
- IP connectivity
- IP services
- Security fundamentals
- Automation and programmability

Course Objectives

- 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 IOS Software
- Describe LANs and the role of switches within LANs
- Describe Ethernet as the network access layer of transmission control protocol and the internet protocol (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 the 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, 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 wide-area network (WAN) and virtual private network (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 the basic quality of service (QoS) concepts
- Describe the concepts of wireless networks, which types of wireless networks can be built and how to use WLC
- Describe network and device architectures and introduce virtualization
- Explain software-defined networks
- Configure basic Cisco 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
- Discuss the need of network programmability in Enterprise networks, common programmability protocols, and configuration management tools
- Describe AI and ML in network operations

Course Prerequisites

The knowledge and skills you are expected to have before attending this training are:

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

Course Outline

1. Exploring the Functions of Networking
2. Introducing the Host-To-Host Communications Model
3. Operating Cisco IOS Software
4. Introducing LANs
5. Exploring the TCP/IP Link Layer
6. Starting a Switch
7. Introducing the TCP/IP Internet Layer, IPv4 Addressing, and Subnets
8. Explaining the TCP/IP Transport Layer and Application Layer
9. Exploring the Functions of Routing
10. Configuring a Cisco Router
11. Exploring the Packet Delivery Process
12. Troubleshooting a Simple Network
13. Introducing Basic IPv6
14. Configuring Static Routing
15. Implementing VLANs and Trunks
16. Routing Between VLANs
17. Introducing OSPF
18. Building Redundant Switched Topologies
19. Improving Redundant Switched Topologies with EtherChannel
20. Explaining the Basics of ACL
21. Enabling Internet Connectivity
22. Introducing AI and ML in Network Operations
23. Introducing System Monitoring
24. Managing Cisco Devices
25. Securing Administrative Access
26. Implementing Device Hardening
27. Exploring Layer 3 Redundancy
28. Introducing WAN Technologies
29. Introducing QoS
30. Explaining Wireless Fundamentals
31. Introducing Architectures and Virtualization
32. Explaining Software-Defined Networking
33. Introducing Network Programmability
34. Examining the Security Threat Landscape
35. Implementing Threat Defense Technologies

Lab Outline

1. Get Started with Cisco CLI
2. Observe How a Switch Operates
3. Perform Basic Switch Configuration
4. Inspect TCP/IP Applications
5. Configure an Interface on a Cisco Router
6. Configure and Verify Layer 2 Discovery Protocols
7. Configure Default Gateway
8. Explore Packet Forwarding
9. Troubleshoot Switch Media and Port Issues
10. Troubleshoot Port Duplex Issues
11. Configure Basic IPv6 Connectivity
12. Configure and Verify IPv4 Static Routes
13. Configure IPv6 Static Routes
14. Configure VLANs and Trunks
15. Configure Inter-VLAN Routing
16. Configure and Verify Single-Area OSPF
17. Configure and Verify EtherChannel
18. Configure and Verify IPv4 ACLs
19. Configure a Provider-Assigned IPv4 Address
20. Configure Static NAT
21. Configure Dynamic NAT and PAT
22. Configure and Verify NTP
23. Create the Cisco IOS Image Backup
24. Upgrade Cisco IOS Image
25. Secure Console and Remote Access
26. Enable and Limit Remote Access Connectivity
27. Configure and Verify Port Security