Implementing and Administering Cisco Solutions (CCNA)

Duration: 5 days
Audience: Professionnel TI

Who is this training for?

This course is intended for anyone seeking CCNA certification. The training also provides foundational knowledge for all support technicians involved in installing, handling, and performing basic verification of Cisco networks.

- Entry-level Network Engineer
- Network Administrator
- Network Support Technician
- Help Desk Technician

Training objectives

- Identify the components of a computer network and describe their basic characteristics
- Understand the host-to-host communication model
- Describe the characteristics and functions of Cisco Internetwork Operating System (IOS) software
- Describe local area networks (LANs) and the role of switches in LANs
- Describe Ethernet as the network access layer of TCP/IP and describe how switches operate
- 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 routing functions
- Implement basic configuration on a Cisco router
- Explain host-to-host communications between switches and routers
- Identify and troubleshoot common switched network issues and common issues related to IPv4 addressing
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Describe the key characteristics and addresses of IPv6, and configure and verify basic IPv6 connectivity

- Describe how static routing works, along with its benefits and limitations
- Describe, implement, and verify virtual LANs (VLANs) and trunks
- Describe the application and configuration of inter-VLAN routing
- Explain the basics of dynamic routing protocols and describe the 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 the basics of WAN and VPN
- Describe how access control lists (ACLs) work and their applications in networking
- Configure Internet access using DHCP clients and explain and configure Network Address Translation (NAT) on Cisco routers
- Describe the basic concepts of quality of service (QoS)
- Describe wireless networking concepts, the types of wireless networks that 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 intelligent 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 Cisco device management
- Describe the current security threat landscape
- Describe threat defense technologies
- Implement basic management plane security configuration for devices
- Implement basic steps to harden network devices

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Summary

Through a combination of lectures and hands-on labs, 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 common security threats. It also introduces the foundations of network programmability, automation, and software-defined networking. This course helps you prepare to take the 200-301 Cisco Certified Network Associate (CCNA) exam. - Duration: 5 days (special schedule from 8 a.m. to 6 p.m.; additional individual work time should be expected)

Course outline

In person:

- Exploring networking functions
- Introducing the host-to-host communication model
- Cisco IOS software features
- Introducing local area networks (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 routing functions
- Configuring a Cisco router E
- xploring the packet delivery process
- Troubleshooting a simple network
- Introducing basic IPv6
- Configuring static routing
- Implementing VLANs and trunks
- Inter-VLAN routing
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Introducing

OSPF Self-study:

- Creating redundant switched topologies

In person:

- Improving redundant switched topologies with EtherChannel

Self-study:

- Exploring Layer 3 redundancy
- Introducing WAN technologie

In person:

- Explaining ACL basics
- Enabling Internet connectivity

Self-study:

- Introducing QoS
- Explaining wireless fundamentals
- Introducing architectures and virtualization

In person:

- Explaining the evolution of intelligent networks
- Introducing system monitoring
- Managing Cisco device

Self-study:

- Reviewing the security threat landscape
- Implementing threat defense technologies

In person:

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- Securing administrative access
- Implementing device hardening

LABS:

- Get started with the Cisco command-line interface (CLI)
- Observe how a switch operates
- Perform basic switch configuration
- Implement initial switch configuration
- Inspect TCP/IP applications
- Configure an interface on a Cisco router
- Configure and verify Layer 2 discovery protocols
- Implement initial router configuration
- Configure the 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 trunking
- Troubleshoot VLANs and trunks
- Configure router-on-a-stick
- Implement multiple VLANs and basic inter-VLAN routing
- Configure and verify single-area OSPF
- Configure and verify EtherChannel
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Improve redundant switched topologies with EtherChannel

- Configure and verify IPv4 access control lists
- 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
- Connect to the WLC
- Monitor the WLC
- Configure a dynamic interface (VLAN)
- Configure a DHCP scope
- Configure a WLAN
- Define a RADIUS (Remote Access Dial-In User Service) server
- Explore management options
- Explore Cisco DNA Center
- Configure and verify NTP
- Configure system message logging
- Create a Cisco IOS image backup
- Upgrade the Cisco IOS image
- Configure WLAN using Wi-Fi Protected Access 2 (WPA2) pre-shared key (PSK) through the graphical interface
- Secure console and remote access
- Enable and limit remote access connectivity
- Secure administrative access to devices
- Configure and verify port security
- Implement device hardening

Approach and methodology

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Learning generally balances structured explanations (concepts, design, best practices) with guided practice. Activities are oriented toward concrete use cases around the course’s main themes.

Prerequisites

- Basic computer knowledge
- Basic PC operating system navigation skills
- Basic Internet usage skills
- Basic knowledge of IP addressing

Certifications

This course prepares you for the 200-301 Cisco Certified Network Associate (CCNA) exam.

Passing this exam earns you the CCNA certification.

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