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CCNA - Implementing and Administering Cisco Solutions v1.0 (Exam Code 200-301)

Overview

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, 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.

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

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

Prerequisites

There are no formal prerequisites for CCNA training. But it is good if you have:

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

Course 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 CenterTM, 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

Course outline

Part 1: Introduction to Networking

- Introduction to TCP/IP Networking
- Fundamentals of Ethernet LANs
- Fundamentals of WANs and IP Routing

Part 2: Implementing Ethernet LANs

- Using the Command-Line Interface
- Analyzing Ethernet LAN Switching
- Configuring Basic Switch Management
- Configuring and Verifying Switch Interfaces

Part 3: Implementing VLANs and STP

- Implementing Ethernet Virtual LANs
- Spanning Tree Protocol Concepts
- RSTP and EtherChannel Configuration

Part 4: IPv4 Addressing

- Perspectives on IPv4 Subnetting
- Analyzing Classful IPv4 Networks
- Analyzing Subnet Masks
- Analyzing Existing Subnets

Part 5: IPv4 Routing

- Operating Cisco Routers
- Configuring IPv4 Addresses and Static Routes
- IP Routing in the LAN
- Troubleshooting IPv4 Routing

Part 6: OSPF

- Understanding OSPF Concepts
- Implementing OSPF
- OSPF Network Types and Neighbors

Part 7: IP Version 6

- Fundamentals of IP Versions 6

- IPv6 Addressing and Subnetting
- Implementing IPv6 Addressing on Routers
- Implementing IPv6 Routing

Part 8: Wireless LANs

- Fundamentals of Wireless Networks
- Analyzing Cisco Wireless Architectures
- Securing Wireless Networks
- Building a Wireless LAN

Part 9: IP Access Control Lists

- Introduction to TCP/IP Transport and Applications
- Basic IPv4 Access Control Lists
- Advanced IPv4 Access Control Lists

Part 10: Security Services

- Security Architectures
- Securing Network Devices
- Implementing Switch Port Security
- Implementing DHCP
- DHCP Snooping and ARP Inspection

Part 11: Security Services

- Devices Management Protocols
- Network Address Translation
- Quality of Service (QoS)
- Miscellaneous IP Services

Part 12: Network Architecture

- LAN Architectures
- WAN Architectures
- Cloud Architectures

Part 13: Network Automation

- Introduction to Controller-Based Networking
- Cisco Software-Defined Access
- Understanding REST and JSON

- Understanding Ansible, Puppet and Chef

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