

CISCO CERTIFIED NETWORK ASSOCIATE

Implementing and Administering Cisco Solutions v2.2

Our Learning Exclusive

- Custom exam prep software and materials
- Exam delivery in classroom with 98% success
- Course specific thinQtank® Learning publications to promote fun exciting learning
- Extended hours of training including immersive hands-on exercises
- WE DO NOT "TEACH THE TEST" We always deliver valuable hands-on experience
- Receive all reading material and study guides when you register
- All courses taught by CCIE expert instructors

Course Duration

- Five days of instructor-led learning
- Three days of self-paced learning
- 60% lecture, 40% hands-on labs

Prerequisites

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

Target Audience

- Those looking to earn their CCNA Certification
- Support technicians who install, operate and verify Cisco network solutions
- Those looking to prepare for their CCNP Certification
- Entry-level network engineer, administrator, network support technician, help desk technician

Exam Information

- 200-301 – Implementing and Administering Cisco Solutions

Delivery Methods

- Instructor-Led Training
- Immersive Live-Online Training
- On-Site and Custom Delivery

Exclusive Tools and Learning Package

- Comprehensive video training package
- 100s of pre-built labs for continued practice and learning
- Custom Linux builds for LAN penetration testing

Course Overview

thinQtank® Learning offering a unique eight-day training camp comprised of five days of instructor-led instruction and three days of self-study that teaches learners how to install, operate, configure, and verify basic IPv4 and IPv6 networks, including configuring networking components, switches, routers, and wireless LAN controllers; managing network devices and identifying basic security threats. As with all of our Cisco Training Experiences – exams are delivered in the classroom.

The Implementing and Administering Cisco Solutions v2.2 Boot Camp course provides a broad range of fundamental knowledge for all IT careers. Through a combination of lecture and hands-on labs, you will learn how to install, operate, configure, and verify a basic IPv4 and IPv6 network. The course covers configuring network components such as switches, routers, and Wireless LAN Controllers; managing network devices; and identifying basic security threats. Network programmability, automation, and software-defined networking are also covered at a foundational level.

Please note that this course is an intensive, extended-hours boot camp. The extended days will be completely Instructor-Led and will include the content from both the 5 days of the standard delivery, and the approx. 3 days of self-study. The self-study content will be provided as part of the digital courseware that you receive at the beginning of the course and should be part of your preparation for the exam.

Course Objectives

- Identify the components of a computer network and explain their basic characteristics
- Describe the features and functions of the Cisco IOS Software
- Explain IPv4 and IPv6 addressing scheme
- Implement basic configurations on a Cisco router
- Identify and resolve common switching and routing networking issues
- Describe network and device architectures and explain virtualization
- Describe the smart network management solutions like Cisco DNA Center, SD-Access and SD-WAN
- Outline threat defense technologies
- And many, many more aspects of a basic IPv4 and IPv6 network

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CCNA Course Modules

1	Exploring the Functions of Networking - What is a Computer Network? - Common Usage of a Computer Network - Components of a Network - Characteristics of a Network - Physical vs. Logical Topologies - Interpreting a Network Diagram - Impact of User Applications on the Network	7	Introducing the TCP/IP Internet Layer, IPv4 Addressing, and Subnets - Internet Protocol - Decimal and Binary Number Systems - Binary-to-Decimal Conversion - Decimal-to-Binary Conversion - IPv4 Address Representation - IPv4 Header Fields - IPv4 Address Classes - Subnet Masks - Subnets - Implementing Subnetting: Borrowing Bits - Implementing Subnetting: Determining the Addressing Scheme - Benefits of VLSM and Implementing VLSM - Private vs. Public IPv4 Addresses - Reserved IPv4 Addresses - Verifying IPv4 Address of a Host
2	Introducing the Host-To-Host Communications Model - Host-To-Host Communications Overview - ISO OSI Reference Model - TCP/IP Protocol Suite - Peer-To-Peer Communications - Encapsulation and De-Encapsulation - TCP/IP Stack vs OSI Reference Model	8	Explaining the TCP/IP Transport Layer and Application Layer - TCP/IP Transport Layer Functions - Reliable vs. Best-Effort Transport - TCP Characteristics - UDP Characteristics - TCP/IP Application Layer - Introducing HTTP - Domain Name System - Explaining DHCP for IPv4
3	Operating Cisco IOS Software - Cisco IOS Software Features and Functions - Cisco IOS Software CLI Functions - Cisco IOS Software Modes	9	Exploring the Functions of Routing - Role of a Router - Router Components - Router Functions - Routing Table - Path Determination - Cisco Router Models - Routing Hierarchy on Internet
4	Introducing LANs - Local Area Networks - LAN Components - Need for Switches - Characteristics and Features of Switches	10	Configuring a Cisco Router - Initial Router Setup - Configuring Router Interfaces - Configuring IPv4 Addresses on Router Interfaces - Checking Interface Configuration and Status - Exploring Connected Devices - Using Cisco Discovery Protocol - Configure and Verify LLDP - Implement an Initial Router Configuration
5	Exploring the TCP/IP Link Layer - Ethernet LAN Connection Media - Ethernet Frame Structure - LAN Communication Types - MAC Addresses - Frame Switching - Duplex Communication		
6	Starting a Switch - Switch Installation - Connecting to a Console Port - Switch Components - Switch LED Indicators - Basic show Commands and Information - Implement the Initial Switch Configuration		

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CCNA Course Modules Continued

11	Exploring the Packet Delivery Process - Layer 2 Addressing - Layer 3 Addressing - Default Gateways - Address Resolution Protocol - Host-To-Host Packet Delivery
12	Troubleshooting a Simple Network - Troubleshooting Methods - Troubleshooting Tools - Troubleshooting Common Switch Media Issues - Troubleshooting Common Switch Port Issues - Troubleshooting Common Problems Associated with IPv4 Addressing
13	Introducing Basic IPv6 - IPv4 Address Exhaustion Workarounds - IPv6 Features - IPv6 Addresses and Address Types - Comparison of IPv4 and IPv6 Headers - Internet Control Message Protocol Version 6 - Neighbor Discovery - IPv6 Address Allocation - Verification of End-To-End IPv6 Connectivity
14	Configuring Static Routing - Routing Operation - Static and Dynamic Routing Comparison - When to Use Static Routing - IPv4 Static Route Configuration - Default Routes - Verifying Static and Default Route Configuration - IPv6 Static Route Configuration - Implement IPv4 Static Routing - Implement IPv6 Static Routing
15	Implementing VLANs and Trunks - VLAN Introduction - Creating a VLAN - Assigning a Port to a VLAN - Trunking with 802.1Q - Configuring an 802.1Q Trunk - VLAN Design Considerations - Troubleshoot VLANs and Trunks
16	Routing Between VLANs - Purpose of Inter-VLAN Routing - Options for Inter-VLAN Routing - Implement Multiple VLANs and Basic Routing Between the VLANs
17	Introducing OSPF - Dynamic Routing Protocols - Path Selection - Link-State Routing Protocol Overview - Link-State Routing Protocol Data Structures - Introducing OSPF - Establishing OSPF Neighbor Adjacencies - OSPF Neighbor States - SPF Algorithm - Building a Link-State Database - Routing for IPv6
18	Building Redundant Switched Topologies - Physical Redundancy in a LAN - Issues in Redundant Topologies - Spanning Tree Operation - Types of Spanning Tree Protocols - PortFast, BPDU Guard and BPDU Filter - Rapid Spanning Tree Protocol - STP Loop Guard - STP Root Guard
19	Improving Redundant Switched Topologies with EtherChannel - EtherChannel Overview - EtherChannel Configuration Options - Configuring and Verifying EtherChannel - Improve Redundant Switched Topologies with EtherChannel
20	Explaining the Basics of ACL - ACL Overview - ACL Operation - ACL Wildcard Masking - Wildcard Mask Abbreviations - Types of Basic ACLs - Configuring Standard IPv4 ACLs - Configuring Extended IPv4 ACLs - Verifying and Modifying IPv4 ACLs - Applying IPv4 ACLs to Filter Network Traffic - Implement Numbered and Named IPv4 ACLs

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CCNA Course Modules Continued

21	Enabling Internet Connectivity - Introducing Network Address Translation - NAT Terminology and Translation Mechanisms - Benefits and Drawbacks of NAT - Static NAT and Port Forwarding - Dynamic NAT - Port Address Translation - Configuring and Verifying Inside IPv4 NAT - Implement PAT	26	Exploring Layer 3 Redundancy - Need for Default Gateway Redundancy - Understanding FHRP - Understanding HSRP
22	Introducing AI and ML in Network Operations - Basics of AI and ML - Advanced AI Concepts - Retrieval-Augmented Generation - Role of AI and ML in Network Operations	27	Introducing WAN Technologies - Introduction to WAN Technologies - WAN Devices and Demarcation Point - WAN Topology Options - WAN Connectivity Options - Virtual Private Networks - Enterprise-Managed VPNs
23	Managing Cisco Devices - Cisco IOS Integrated File System and Devices - Stages of the Router Power-On Boot Sequence - Loading and Managing System Images Files - Loading Cisco IOS Configuration Files - Validating Cisco IOS Images Using MD5/SHA512 - Managing Cisco IOS Images and Device Configuration Files - Cisco IOS WebUI	28	Introducing QoS - Converged Networks - QoS Defined - QoS Policy - QoS Mechanisms - QoS Models - Deploying End-to-End QoS
24	Securing Administrative Access - Network Device Security Overview - Securing Access to Privileged EXEC Mode - Securing Console Access - Securing Remote Access - Configuring the Login Banner - Limiting Remote Access with ACLs - External Authentication Options - Secure Device Administrative Access	29	Explaining Wireless Fundamentals - Wireless Technologies - Wireless Radio Communication - WLAN Architectures - Wi-Fi Channels - AP and WLC Management
25	Implementing Device Hardening - Securing Unused Ports - Infrastructure ACL - Disabling Unused Services - Port Security - Mitigating VLAN Attacks - Dynamic ARP Inspection - Mitigating STP Attacks - Implement Device Hardening	30	Introducing Architectures and Virtualization - Introduction to Network Design - Enterprise Three-Tier Hierarchical Network Design - Spine - Leaf Network Design - Cisco Enterprise Architecture Model - Underlay and Overlay Network Concepts - Cloud Computing Overview - Network Device Architecture - Virtualization Fundamentals
		31	Explaining Software-Defined Networking - Software-Defined Networking - Traditional versus Software-Defined Networks - Software-Defined Network Layers - Introducing Cisco Catalyst Center - Cisco Catalyst Center Dashboard and Tools - Introducing Cisco SD-Access - Introducing Cisco Catalyst SD-WAN - Introducing Cisco Meraki

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CCNA Course Modules Continued

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Introducing Network Programmability

- Traditional Network Management
- Network Automation and Programmability
- Network Automation Use Cases
- Model-Driven Programmability
- Data Encoding Formats
- JavaScript Object Notation
- Extensible Markup Language
- YAML Data Serialization Standard
- Network Management Protocols
- Configuration Management Tools Overview
- Ansible
- Terraform

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Examining the Security Threat Landscape

- Security Threat Landscape Overview
- Malware
- Hacking Tools
- DoS and DDoS
- Spoofing
- Reflection and Amplification Attacks
- Social Engineering
- Evolution of Phishing
- Password Attacks
- Reconnaissance Attacks
- Buffer Overflow Attacks
- Man-in-the-Middle Attacks
- Vectors of Data Loss and Exfiltration
- Other Considerations

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Implementing Threat Defense Technologies

- Information Security Overview
- Firewalls
- Intrusion Prevention Systems
- Protection Against Data Loss and Phishing Attacks
- Defending against DoS and DDoS Attacks
- Introduction to Cryptographic Technologies
- IPsec Security Services
- Secure Sockets Layer and Transport Layer Security
- Wireless Security Protocols

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CCNA Labs and Demonstrations

- Discovery 1: Get Started with Cisco CLI
- Discovery 2: Observe how a switch operates
- Discovery 3: Perform basic switch configuration
- Discovery 4: Inspect TCP/IP Applications
- Discovery 5: Configure an interface on a Cisco router
- Discovery 6: Configure and verify Layer 2 discovery protocols
- Discovery 7: Configure default gateway
- Discovery 8: Explore packet forwarding
- Discovery 9: Troubleshoot switch media and port issues
- Discovery 10: Troubleshoot port duplex issues
- Discovery 11: Configure basic IPv6 connectivity
- Discovery 12: Configure and verify IPv4 static routes
- Discovery 13: Configure IPv6 static routes
- Discovery 14: Configure VLAN and trunk
- Discovery 15: Configure a router on a stick
- Discovery 16: Configure and verify single area OSPF
- Discovery 17: Configure and verify EtherChannel
- Discovery 18: Configure and verify IPv4 ACLs
- Discovery 19: Configure a provider assigned IPv4 address
- Discovery 20: Configure static NAT
- Discovery 21: Configure dynamic NAT and PAT
- Discovery 22: Log in to the WLC
- Discovery 23: Monitor the WLC
- Discovery 24: Configure a dynamic (VLAN) interface
- Discovery 25: Configure a DHCP server
- Discovery 26: Configure a WLAN
- Discovery 27: Define a RADIUS server
- Discovery 28: Explore management options
- Discovery 29: Explore the Cisco DNA Center
- Discovery 30: Configure and verify NTP
- Discovery 31: Create the Cisco IOS image backup
- Discovery 32: Upgrade Cisco IOS image
- Discovery 33: Configure WLAN using WPA2 PSK using the GUI
- Discovery 34: Secure console and remote access
- Discovery 35: Enable and limit remote access connectivity
- Discovery 36: Configure and verify port security

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