

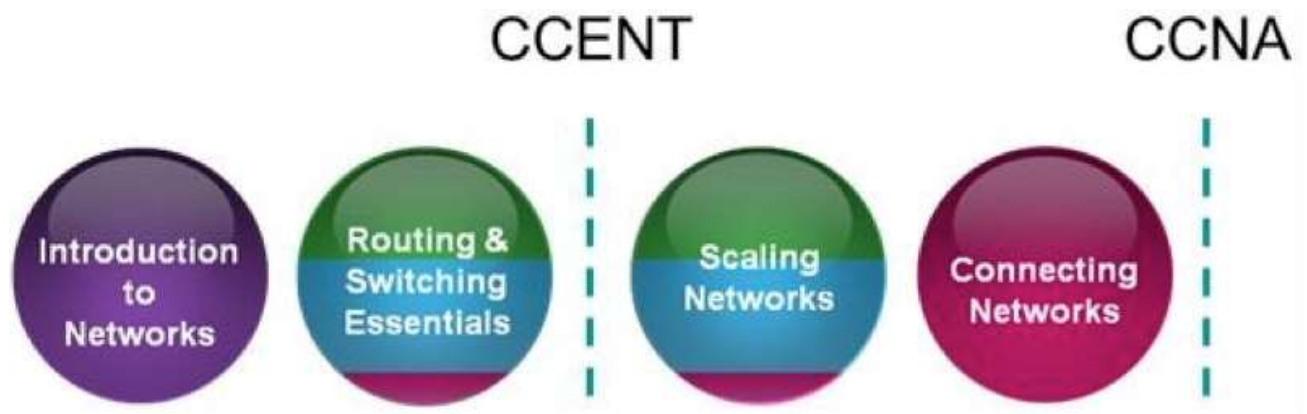
CCNA Routing and Switching Course Overview

Course Structure and Sequences

Market research and global employers have consistently indicated that the skills gap for general networking skills is shrinking, while the skills gap for essential networking technologies such as security, voice, and wireless, and for emerging technologies such as data center, cloud, and video, is growing. As a global leader in technology and networking, Cisco developed the new CCENT and CCNA Routing and Switching certifications and curriculum to remain aligned with the rapidly changing global job market and trends.

The Cisco CCNA® Routing and Switching curriculum is designed for Cisco Networking Academy® course participants who are seeking entry-level jobs in the Information Communications Technology (ICT) industry or wish to keep pace with fast paced implementation of ICT in their industry. CCNA Routing and Switching provides an integrated and comprehensive coverage of networking topics, from fundamentals to advanced applications and services, while providing opportunities for hands-on practical experience and career skills development.

Course participants will be prepared to take the Cisco CCENT® certification exam after completing a set of two courses and the CCNA Routing and Switching certification* exam after completing a set of four courses. The curriculum also helps course participants develop essential skills and builds a foundation for success in networking-related careers.



* Please note: Cisco retired all previous versions of CCNA Certification exams as of 2013-09-31 including CCNA Discovery and CCNA Exploration.

CCNA1: Introduction to Networks

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, participants will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.

Participants who complete Introduction to Networks will be able to perform the following functions:

- Understand and describe the devices and services used to support communications in data networks and the Internet
- Understand and describe the role of protocol layers in data networks
- Understand and describe the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments
- Design, calculate, and apply subnet masks and addresses to fulfill given requirements in IPv4 and IPv6 networks
- Explain fundamental Ethernet concepts such as media, services, and operations
- Build a simple Ethernet network using routers and switches
- Use Cisco command-line interface (CLI) commands to perform basic router and switch configurations
- Utilize common network utilities to verify small network operations and analyze data traffic

Table 1. Introduction to Networks Course Outlines

Chapter	Introduction to Networks
1	Exploring the Network
2	Configuring a Network Operating System
3	Network Protocols and Communications
4	Network Access
5	Ethernet
6	Network Layer
7	Transport Layer
8	IP Addressing
9	Subnetting IP Networks
10	Application Layer
11	It's a Network

CCNA2: Routing and Switching Essentials

This course describes the architecture, components, and operations of routers and switches in a small network. Participants learn how to configure a router and a switch for basic

functionality. By the end of this course, participants will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, OSPF, single area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks.

- Participants who complete the Routing and Switching Essentials course will be able to perform the following functions:
- Understand and describe basic switching concepts and the operation of Cisco switches
- Understand and describe the purpose, nature, and operations of a router, routing tables, and the route lookup process
- Understand and describe how VLANs create logically separate networks and how routing occurs between them
- Understand and describe dynamic routing protocols, distance vector routing protocols, and link-state routing protocols
- Configure and troubleshoot static routing and default routing (RIP and RIPv2)
- Configure and troubleshoot an Open Shortest Path First (OSPF) network
- Understand, configure, and troubleshoot access control lists (ACLs) for IPv4 and IPv6 networks
- Understand, configure, and troubleshoot Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks
- Understand, configure, and troubleshoot Network Address Translation (NAT) operations

Table 2. Routing and Switching Essentials Course Outlines

Chapter	Routing and Switching Essentials
1	Introduction to Switched Networks
2	Basic Switching Concepts and Configuration
3	VLANs
4	Routing Concepts
5	Inter-VLAN Routing
6	Static Routing
7	Routing Dynamically
8	Single-Area OSPF
9	Access Control Lists
10	DHCP
11	Network Address Translation for IPv4

CCNA3: Scaling Networks

This course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Participants learn how to configure routers and switches for advanced functionality. By the end of this course, participants will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks. Participants will also develop the knowledge and skills needed to implement a WLAN in a small-to-medium network.

Participants who complete the Scaling Networks course will be able to perform the following functions:

- Understand, configure and troubleshoot enhanced switching technologies such as VLANs, Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Plus Protocol (PVST+), and EtherChannel
- Understand, configure, and troubleshoot first hop redundancy protocols (HSRP) in a switched network
- Understand, configure, and troubleshoot wireless routers and wireless clients
- Configure and troubleshoot routers in a complex routed IPv4 or IPv6 network using single-area OSPF, multiarea OSPF, and Enhanced Interior Gateway Routing Protocol (EIGRP)
- Manage Cisco IOS® Software licensing and configuration files

Table 3. Scaling Networks Course Outline

Chapter	Scaling Networks
1	Introduction to Scaling Networks
2	LAN Redundancy
3	Link Aggregation
4	Wireless LANs
5	Multi-area OSPF
6	Network Layer
7	EIGRP
8	EIGRP Advanced Configurations and Troubleshooting
9	IOS Images and Licensing

CCNA4: Connecting Networks

This course discusses the WAN technologies and network services required by converged applications in a complex network. The course enables participants to understand the selection criteria of network devices and WAN technologies to meet network requirements. Participants learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Participants will also develop the knowledge and skills needed to implement virtual private network (VPN) operations in a complex network.

- Participants who complete the Connecting Networks course will be able to perform the following functions:
- Understand and describe different WAN technologies and their benefits
- Understand and describe the operations and benefits of virtual private networks (VPNs) and tunneling
- Understand, configure, and troubleshoot serial connections
- Understand, configure, and troubleshoot broadband connections
- Understand, configure, and troubleshoot tunneling operations
- Understand, configure, and troubleshoot Network Address Translation (NAT) operations
- Monitor and troubleshoot network operations using syslog, SNMP, and NetFlow
- Understand and describe network architectures:
 - Borderless networks
 - Data centers and virtualization
 - Collaboration technology and solutions

Table 4. Connecting Networks Course Outline

Chapter	Connecting Networks
1	Hierarchical Network Design
2	Connecting to the WAN
3	Point-to-Point Connections
4	Frame Relay
5	Broadband Solutions
6	Static Routing
7	Securing Site-to-Site Connectivity
8	Monitoring the Network
9	Troubleshooting the Network

* For more information about CCNA Programs please visit the Cisco [CCNA Routing and Switching](#) certification