

# Networking

## Why Networking?

As our world becomes increasingly reliant on computer networks and networking technologies, there's a growing need for professionals who can design, build, manage, and secure networks.




Our networking courses introduce students to a range of topics, from routing protocols and network applications to network services and configurations. The courses emphasize hands-on learning and troubleshooting.


## Career Prep

Our networking courses align with globally recognized career certifications including Cisco CCENT, CCNA R&S, and CCNP R&S.

Students learn how to become network administrators and network managers.



CCNA Routing  
& Switching  
(1-4)    PT

CCNP Routing  
& Switching  
(1-3) 

Networking  
Essentials  PT

# CCNA Routing and Switching Curriculum

## Curriculum Overview

The 4 courses in the CCNA R&S curriculum help students develop a comprehensive understanding of how networks operate, from protocols and services to network management, with an emphasis on hands-on learning and essential career skills like problem solving and collaboration.

## Career Prep

Courses 1-2 align with the Cisco CCENT certification and courses 3-4 align with the Cisco CCNA R&S certification. Students gain the skills needed to become network administrators, technicians, or managers.

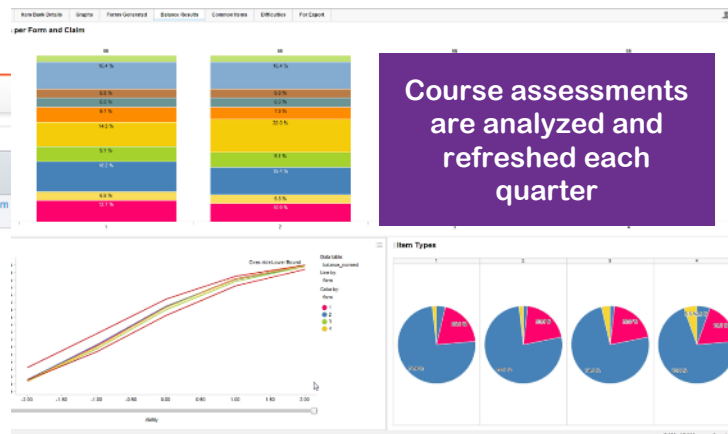
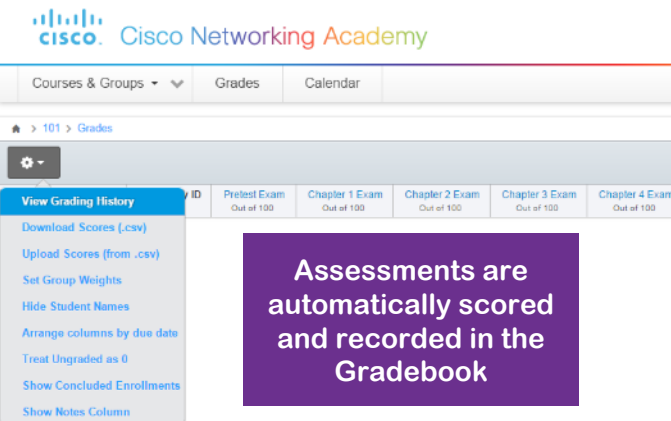
**Prerequisites:** IT Essentials or equivalent knowledge

**Languages:** Arabic, Chinese-Simplified, English, French, Japanese, Portuguese-Brazilian, Russian, Spanish (courses 1 and 2 also available in German, Hungarian, and Turkish; course 1 also available in Romanian)

**Course Delivery:** Instructor led

**Estimated Time to Complete:** 280 hours

**Recommended Next Course:** CCNA Security or CCNP



## Learning Components

- 4 courses: Introduction to Networks, Routing and Switching Essentials, Scaling Networks, Connecting Network
- Hands-on labs and Cisco Packet Tracer network simulation activities
- Videos and activities to reinforce learning
- Quizzes and exams to measure learning outcomes

# CCNA R&S: Introduction to Networks

## Course Overview

The first course in the Cisco CCNA Routing and Switching curriculum teaches students about the architecture, structure, functions and components of the Internet and other computer networks.

Students gain an essential foundational understanding of how networks operate.

## Career Prep

Secondary school through university students seeking skills for entry-level networking jobs or more specialized ICT training.

**Prerequisites:** IT Essentials or equivalent knowledge

**Languages:** Arabic, Chinese-Simplified, Croatian, English, French, German, Hungarian, Japanese, Portuguese-Brazilian, Polish, Romanian, Russian, Spanish, Turkish

**Course Delivery:** Instructor led

**Estimated Time to Complete:** 70 hours

**Recommended Next Course:** CCNA R&S Routing & Switching Essentials



Chapter 8: IP Addressing / 8.2.4.2 Static Configuration of a Global Unicast Address

**IPv6 Network Addresses**

Router Configuration

Model IPv6 configuration and verification commands in the Cisco IOS are similar to their IPv4 counterparts. In many cases the only difference is the use of `ipv6` in place of `ip` within the commands.

The `interface` command to configure an IPv6 global unicast address on an interface is `ipv6 address` `ipv6-address/prefix-length`.

Notice that there is not a space between `ipv6-address` and `prefix-length`.

The example configuration will use the topology shown in Figure 1 and these IPv6 subnets:

- 2001:DB8:ACAD:1::/64
- 2001:DB8:ACAD:2::/64
- 2001:DB8:ACAD:3::/64

As shown in Figure 2, the commands required to configure the IPv6 global unicast address on the GigabitEthernet 0/0 interface of R1 would be:

```
Router(config)#interface gigabitethernet 0/0
Router(config-if)#ipv6 address 2001:db8:acad:1::1/64
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#interface gigabitethernet 0/1
Router(config-if)#ipv6 address 2001:db8:acad:2::1/64
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#interface serial 0/0/0
Router(config-if)#ipv6 address 2001:db8:acad:3::1/64
Router(config-if)#clock rate 56000
Router(config-if)#no shutdown
```

**Activity – Unicast, Broadcast, or Multicast?**

Click **Start** to view the Destination IP Address. Next, click the host(s) which will receive a packet based on the address type (Unicast, Broadcast or Multicast).

This is a timed activity.

Time Remaining: 10

Destination IP Address =

Source Host

## Learning Components

- 11 chapters
- 33 hands-on labs and 1 hands-on skills assessment
- Pre-test, 11 chapter quizzes, 2 sectional quizzes, 11 chapter exams, and 1 final exam
- 2 Cisco Packet Tracer Skills Based Assessments



# CCNA R&S: Routing and Switching Essentials

# Course Overview

The second course in the CCNA Routing and Switching curriculum describes the architecture, components, and operations of routers and switches in a small network.

Students learn how to configure a router and a switch for basic functionality

## Career Prep

Secondary school through university students seeking Cisco CCENT certification and skills for entry-level network technician jobs.

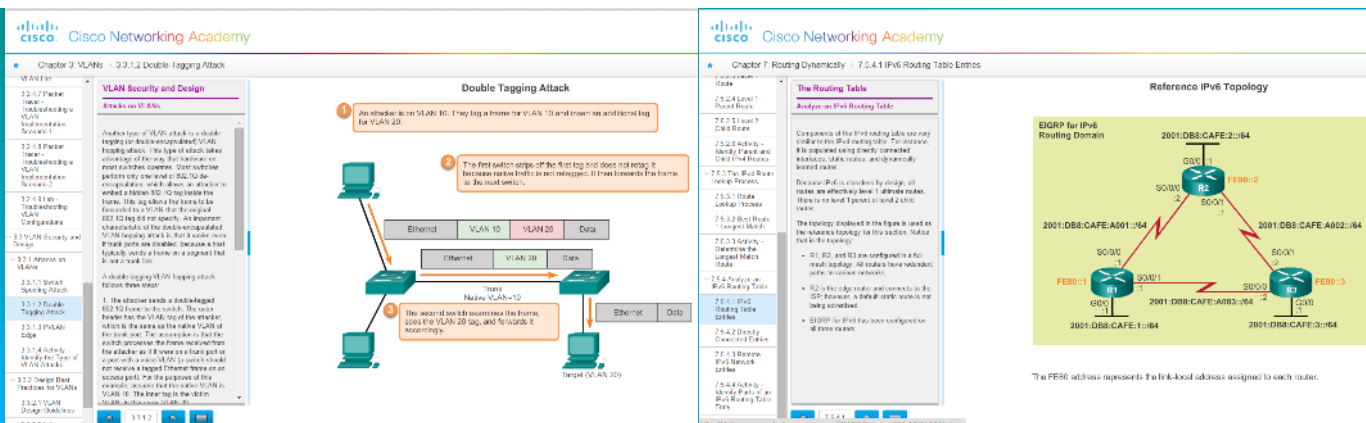
**Prerequisites:** CCNA R&S: Introduction to Networks

**Languages:** Arabic, Chinese-Simplified, English, French, German, Hungarian, Japanese, Portuguese-Brazilian, Polish, Russian, Spanish, Turkish

**Course Delivery:** Instructor led

**Estimated Time to Complete: 70 hours**

**Recommended Next Course:** CCNA R&S Scaling Networks or CCNA Security



## Learning Components

- 11 chapters
- 33 hands-on labs and 1 hands-on skills assessment
- Pre-test, 11 chapter quizzes, 11 chapter exams, 2 sectional quizzes, and 1 final exam
- 3 Cisco Packet Tracer Skills Based Assessments

# CCNA R&S: Scaling Networks

## Course Overview

The third course in the CCNA Routing and Switching curriculum describes the architecture and operations of routers and switches in large, complex networks.

Students learn how to configure and troubleshoot routing and switching technologies and protocols.

## Career Prep

Junior college and university students seeking skills for entry-level network administration jobs or more specialized ICT training

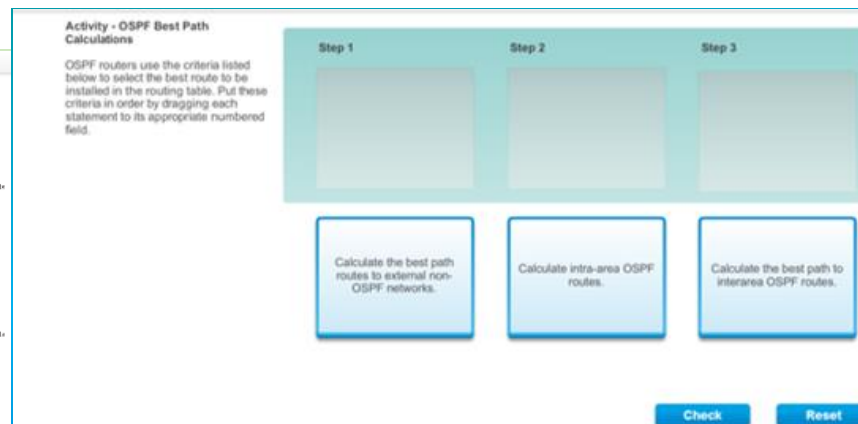
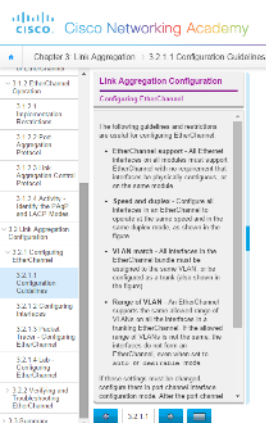
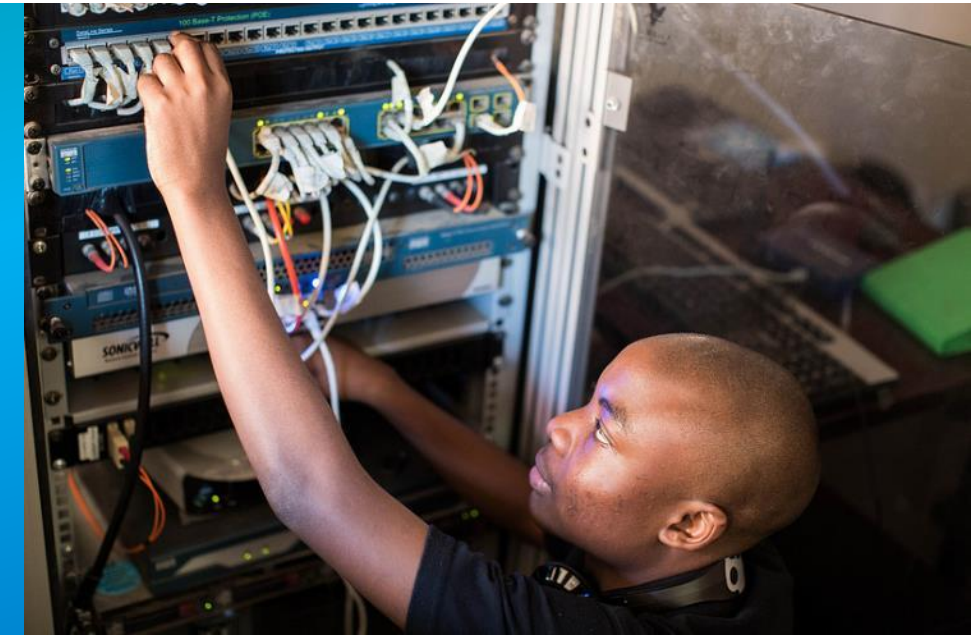
**Prerequisites:** CCNA R&S: Routing & Switching Essentials

**Languages:** Arabic, Chinese-Simplified, English, French, Japanese, Portuguese-Brazilian, Russian, Spanish

**Course Delivery:** Instructor led

**Estimated Time to Complete:** 70 hours

**Recommended Next Course:** CCNA R&S Connecting Networks



## Learning Components

- 9 chapters
- 19 hands-on labs and 2 hands-on skills assessments
- Pre-test, 9 chapter quizzes, 9 chapter exams, 2 sectional quizzes, and 1 final exam
- 2 Cisco Packet Tracer Skills Based Assessments

# CCNA R&S: Connecting Networks

## Course Overview

The fourth and final course in the CCNA Routing and Switching curriculum covers the WAN technologies and network services employed by converged applications in a complex network.

Students learn how to configure and troubleshoot network devices and implement virtual private networks.

## Career Prep

Junior college and university students seeking Cisco CCNA R&S certification and skills for entry-level network administration jobs

**Prerequisites:** CCNA R&S: Scaling Networks

**Languages:** Arabic, Chinese-Simplified, English, French, Japanese, Portuguese-Brazilian, Russian, Spanish

**Course Delivery:** Instructor led

**Estimated Time to Complete:** 70 hours

**Recommended Next Course:** CCNA Security or CCNP R&S ROUTE



**Multi Building Enterprise Network Design**

1  
2

**Activity – Gathering Symptoms of a Network Problem**  
Match each of the commands used to gather information about network problems to its definition.

Command	Definition
show protocols	Sends an echo request to an address and waits for a reply.
show ipv6 route	Shows the path a packet takes through the networks.
telnet	Displays a summary status of all the IP version 6 interfaces on a device.
ping	Shows the current configuration of the device.
debug ?	Displays the IP version 6 routing table.
traceroute	Offers a list of options for real-time diagnostics.
show running-config	Shows global and interface specific status of Layer 3 protocols.
show ipv6 interface brief	Connects remotely to a device by IP address or URL.

Check Reset

## Learning Components

- 9 chapters
- 12 hands-on labs and 1 hands-on skills assessment
- Pre-test, 9 chapter quizzes, 9 chapter exams, 2 sectional quizzes, and 1 final exam
- 2 Cisco Packet Tracer Skills Based Assessments



# CCNP Routing & Switching

## Course Overview

The three CCNP Routing & Switching courses provide a comprehensive overview of enterprise-level networking concepts, including advanced routing, switching, and troubleshooting.

The curriculum integrates industry-relevant instructional approaches to help students prepare for career opportunities.

## Career Prep

College students seeking hands-on practical experience, Cisco CCNP R&S certification, and career skills in advanced routing, switching, and troubleshooting.

**Prerequisites:** CCNA R&S courses 1 - 4

**Languages:** English

**Course Delivery:** Instructor led, textbook based

**Estimated Time to Complete:** 210 hours



## Learning Components

- 3 courses: CCNP R&S ROUTE: Implementing IP Routing, CCNP R&S SWITCH: Implementing IP Switched Networks, and CCNP R&S TSHOOT: Troubleshooting and Maintaining IP Networks
- Hands-on labs
- Cisco Press textbooks
- Chapter exams and final exams