



# CCNA Certification Guide

Top Cisco resources to plan  
and prepare for certification

Get started





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# CCNA certification overview: Your gateway to IT excellence



## Overview

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# Unlock your career potential and drive success

If you're looking to embark on a rewarding and lucrative information technology (IT) career, obtaining your CCNA certification is a great place to start.

Earning your CCNA gives you a solid foundation for any field, role, or specialty you want to pursue in IT. It covers the basics, from IP addressing to security, automation, and AI. A CCNA certification is the perfect start if you know you want to build or support IT infrastructure. You can specialize later.

A CCNA can help you prepare for a wide variety of IT jobs, including:

- Network engineer
- Network support technician
- Network administrator
- Business roles in IT organizations, from sales and marketing to the management track



## THE WHY

Earning your CCNA is a strategic investment, validating skills that drive significant career advancement and organizational success in today's dynamic IT landscape.

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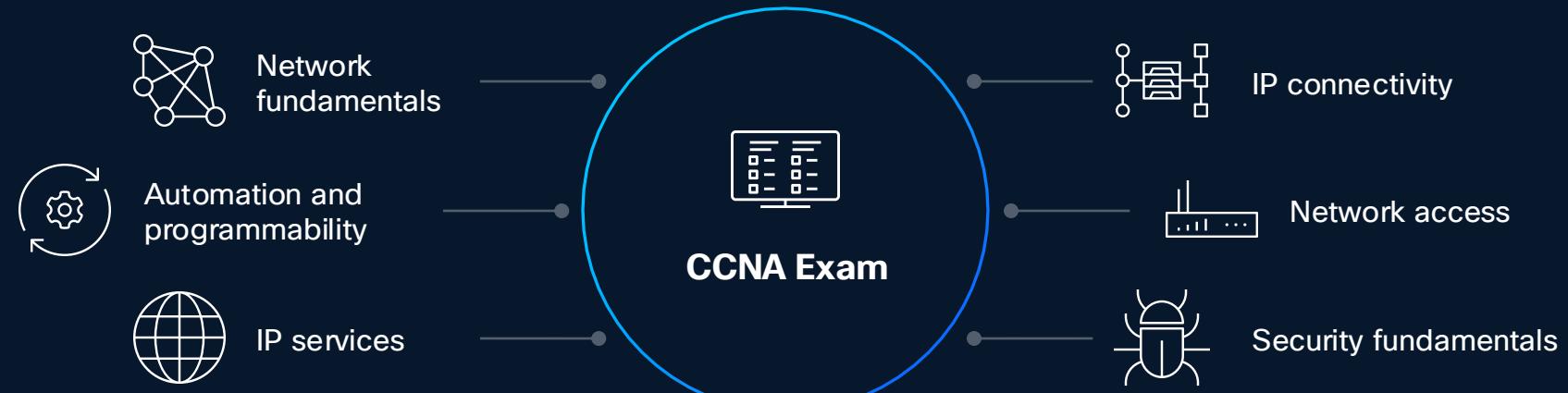
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# The network needs you

The field of IT is full of rewarding, meaningful, and challenging work. Earning your CCNA certification can make your resume stand out and get your foot in the door. The CCNA equips you with a broad range of career skills.

[Learn more](#)



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# Why certify? Elevate your career.

Certifications are powerful catalysts for personal and professional growth, offering tangible benefits. According to the latest Pearson VUE 2025 Value of IT Certification Candidate report, certifications help to:

## Boost your confidence and opportunities

82%

of respondents have reported gaining confidence in their abilities to pursue new job opportunities.

## Grow your career and salary

63%

of certified professional respondents receive or anticipate promotions, 32% see salary increases, with 31% of those raises exceeding 20%.

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# Why Cisco? Build on excellence.

Cisco certifications are the recognized gold standard, bringing significant value to individuals and the organizations that employ them. And employers, including Fortune 500 companies, know it.

## **From entry to expert, Learn with Cisco is with you**

Cisco best-in-class training helps you gain the skills employers are looking for. Our certifications are available in multiple levels of expertise and for various professional areas. Whether you're just starting out or advancing to expert level, Learn with Cisco is with you every step of the way in your entry-to-expert tech learning journey.

## **Highlight your accomplishments at every milestone**

Our certificates of training completion and certification logos allow you to highlight your professional achievements every step of the way. Share on social, resumes, and digital profiles to prove the knowledge you've gained and stand out in the technologies of your choice.

## **Earn top salaries**

Cisco certifications consistently rank among the highest-paying in the IT industry. The in-demand skills gained from these certifications in networking and security allow professionals to command top salaries.<sup>1</sup>

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# Certifications matter to employers

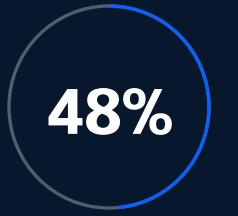
Skillsoft's Global Knowledge 2024 IT Skills and Salary Report examined data from thousands of IT professionals and confirmed that certified staff add value to an organization. In fact, 49% of IT decision-makers say that certified staff add value by closing organizational skill gaps and by spending less time on troubleshooting issues.

## Certified professionals also see their added value:



**60%**

of certified professionals believe the quality of their work has improved



**48%**

reported being more engaged in their work



**43%**

are faster at performing their jobs

By choosing CCNA, you become a highly valuable, innovative, and productive asset, securing your place in the industry and contributing directly to organizational success.

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# CCNA study guide



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# Exam topics



Already decided to get certified, and want to get started? Exam topics are the best place to start to kickstart your studies. They tell you what to focus on, including how much weight is placed on each topic in the 200-301 CCNA v1.1 exam.

Let's start with network fundamentals.

**20%**

## 1.0 Network Fundamentals

1.1 Explain the role and function of network components	1.8 Configure and verify IPv6 addressing and prefix
1.2 Describe characteristics of network topology architectures	1.9 Describe IPv6 address types
1.3 Compare physical interface and cabling types	1.10 Verify IP parameters for Client OS (Windows, Mac OS, Linux)
1.4 Identify interface and cable issues (collisions, errors, mismatch duplex, and/or speed)	1.11 Describe wireless principles
1.5 Compare TCP to UDP	1.12 Explain virtualization fundamentals (server virtualization, containers, and VRFs)
1.6 Configure and verify IPv4 addressing and subnetting	1.13 Describe switching concepts
1.7 Describe private IPv4 addressing	

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# Exam topics



Walk through network access. This domain is where the rubber meets the road. Learn what you need to know to configure and deploy devices in the network

20%

## 2.0 Network Access

2.1 Configure and verify VLANs (normal range) spanning multiple switches	2.6 Describe Wireless Architectures and AP modes
2.2 Configure and verify interswitch connectivity	2.7 Describe physical infrastructure connections of WLAN components (AP, WLC, access/trunk ports, and LAG)
2.3 Configure and verify Layer 2 discovery protocols (Cisco Discovery Protocol and LLDP)	2.8 Describe network device management access (Telnet, SSH, HTTP, HTTPS, console, TACACS+/RADIUS, and cloud managed)
2.4 Configure and verify (Layer 2 / Layer 3) EtherChannel (LACP)	2.9 Interpret the wireless LAN GUI configuration for client connectivity, such as WLAN creation, security settings, QoS profiles, and advanced settings
2.5 Interpret basic operations of Rapid PVST+ Spanning Tree Protocol	

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# Exam topics



Welcome to IP connectivity. This topic has the most weight of any domain in our list. Why is this so important? AI. Cloud. Security. Automation. These are the foundation for IP connectivity—if network traffic can't reach its destination, none of these can happen.

25%

## 3.0 IP Connectivity

- 3.1 Interpret the components of routing table
- 3.2 Determine how a router makes a forwarding decision by default
- 3.3 Configure and verify IPv4 and IPv6 static routing
- 3.4 Configure and verify single area OSPFv2
- 3.5 Describe the purpose, functions, and concepts of first hop redundancy protocols

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# Exam topics



Learn about IP services. Even though this topic is only weighted at 10%, be sure to spend some time here. You'll need to be comfortable and ready to configure, explain, and describe some of these services for the exam.

10%

## 4.0 IP Services

<ul style="list-style-type: none"><li>4.1 Configure and verify inside source NAT using static and pools</li><li>4.2 Configure and verify NTP operating in a client and server mode</li><li>4.3 Explain the role of DHCP and DNS within the network</li><li>4.4 Explain the function of SNMP in network operations</li><li>4.5 Describe the use of syslog features including facilities and levels</li><li>4.6 Configure and verify DHCP client and relay</li></ul>	<ul style="list-style-type: none"><li>4.7 Explain the forwarding per-hop behavior (PHB) for QoS, such as classification, marking, queuing, congestion, policing, and shaping</li><li>4.8 Configure network devices for remote access using SSH</li><li>4.9 Describe the capabilities and functions of TFTP/FTP in the network</li></ul>
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# Exam topics



Security fundamentals is a critical domain for any network. One key area to dive into: How to secure network access to the device itself.

**15%**

## 5.0 Security Fundamentals

- 5.1 Define key security concepts (threats, vulnerabilities, exploits, and mitigation techniques)
- 5.2 Describe security program elements (user awareness, training, and physical access control)
- 5.3 Configure and verify device access control using local passwords
- 5.4 Describe security password policies elements, such as management, complexity, and password alternatives (multifactor authentication, certificates, and biometrics)
- 5.5. Describe IPsec remote access and site-to-site VPNs
- 5.6 Configure and verify access control lists
- 5.7 Configure and verify Layer 2 security features (DHCP snooping, dynamic ARP inspection, and port security)
- 5.8 Compare authentication, authorization, and accounting concepts
- 5.9 Describe wireless security protocols (WPA, WPA2, and WPA3)
- 5.10 Configure and verify WLAN within the GUI using WPA2 PSK

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# Exam topics



Understand automation and programmability. Learn what's possible in this domain, so you can be ready to explain, compare, and describe how these topics relate to what you'll be doing as a network engineer.

**10%**

## 6.0 Automation and Programmability

- 6.1 Explain how automation impacts network management
- 6.2 Compare traditional networks with controller-based networking
- 6.3 Describe controller-based, software defined architecture (overlay, underlay, and fabric)
- 6.4 Explain AI (generative and predictive) and machine learning in network operations
- 6.5 Describe characteristics of REST-based APIs (authentication types, CRUD, HTTP verbs, and data encoding)
- 6.6 Recognize the capabilities of configuration management mechanisms, such as Ansible and Terraform
- 6.7 Recognize components of JSON-encoded data

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# Pro tips

When the verb for a topic area is “describe,” you won’t need the same depth of knowledge for that topic as when the verbs are “configure,” “troubleshoot,” and “design.”

[Download the current  
200-301 CCNA Exam Topics](#)

For a detailed review of all the exam topics, watch the “CCNA Exam Topics Review” series on the official Learn with Cisco YouTube channel. It’s a fantastic resource for a deeper understanding of the material.

[Watch the video series](#)



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# Official training: Cisco Networking Academy

If you're a student or new to networking, this might be the best place for you to start. Find online courses, in-person learning, and certification-aligned pathways like CCNA to help begin, change, or propel your first career in tech. Did we mention it's free?

## Choose from several no-cost training options to start learning:

### **CCNA: Introduction to Networks**

The first in a three-course series to build your networking skills and get ready for CCNA certification and associate-level jobs.

### **CCNA: Switching, Routing, and Wireless Essentials**

The second in the three-course series. Learn the skills vital to your network infrastructure while you continue to prep for CCNA.

### **CCNA: Enterprise Networking, Security, and Automation**

The third in a three-course series. Gain the expertise required to handle even the most complex networks and get CCNA exam-ready.

### **Cisco Packet Tracer**

Dive into Cisco official, structured CCNA curriculum with interactive online modules, comprehensive lessons, and essential hands-on labs. Delivered through educational institutions worldwide, NetAcad often provides instructor support and is a fantastic foundation for mastering CCNA concepts.

### **Pro tip**

Not quite ready to start CCNA? The CCST Networking training and certification might be the perfect first step.

[Learn more](#)

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# Official training: Cisco Certifications

Start here. Go anywhere. This is where the real work happens. You'll need two things: the exam topics as well as a strategy for learning, studying, and practicing. Learn with Cisco has everything you need to build upon what you already know.

## Choose from several training options to help you prepare:

### Online, on-demand training from Cisco U.

[Implementing and Administering Cisco Solutions | CCNA Learning Path](#) will build the skills you need to install, operate, configure, and verify basic networks, while you prepare to take the CCNA exam. Short on time? Catch our free [CCNA tutorials](#) on the topics you care about.



### Practice exam

The [Cisco Exam Review: CCNA](#) helps you prepare to take the CCNA exam. You will gain practical experience for exam topics by testing your key knowledge, skills, and abilities.

### Instructor-led courses

Use the [Cisco Learning Locator](#) to find courses both in-person and virtual.

### If books are your thing

Check out the [Cisco Press CCNA 200-301 Official Cert Guide, Volume 2](#), a perfect addition to your self-study plan.

Regardless of how you prepare for the exam, it's crucial to get your hands on the gear to practice. This is called "labbing," as in "practicing in a lab environment." Your ability to execute critical tasks will be tested on the exam, so you need to practice. Lab early. Lab often. Then lab some more. [Explore Cisco Modeling Labs](#).

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# Exam success



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# What to expect

CCNA certification exams are administered by our testing partner, Pearson VUE, as proctored exams. When you take the exam, you'll be in a controlled environment to ensure fairness and to give you the best, most consistent experience.

CCNA Exam v1.1 (CCNA 200-301) is a 120-minute exam associated with the CCNA certification. This exam tests a candidate's knowledge and skills related to network fundamentals, network access, IP connectivity, IP services, security fundamentals, automation and programmability. The course, Implementing and Administering Cisco Solutions (CCNA), helps candidates prepare for this exam.

Cisco performance-based testing gives you an experience that best replicates a true lab environment. As a result, the number of questions on your exam may vary. To find out more about this testing experience, read our [Performance-Based Lab Exam Items Build Opportunities](#) blog.



To view a walk-through demonstration of the various exam question types and how they function, check out the [Cisco Certification Exam Tutorial Videos](#) page.

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Visit [cisco.com/go/onlinetesting](https://cisco.com/go/onlinetesting) to perform a system check.

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# Ensure your exam success: Safeguard and Safeguard Plus

To help you build more confidence, Cisco Exam Safeguard offers two ways to help give passing your exam a backup plan. Register for your exam as usual, if you don't pass your first exam attempt, you can retake the exam at no additional cost. You'll get the peace of mind that comes from knowing you've invested in a second chance, whether you need it or not.

With Safeguard Plus, we also include the practice exam so you can practice as many times as you need to feel ready.

[Learn more](#)

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# Next steps



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# Next steps

The IT landscape evolves daily, and your CCNA provides the core foundation to build your career. With your CCNA, you'll be more knowledgeable and confident about all things IT, positioning you for a rewarding and lucrative IT career.

## Here's how to leverage your certification and continue your growth:



### Communicate your value

Use this guide and [email template](#) to let your manager know why training and certification is so beneficial for you—and for them. Ask your manager to sponsor your training to help transform your career, income, and skill set.



### Explore further certifications

Your CCNA is a gateway. Consider pursuing Specialist, Professional, or Expert-level certifications to deepen your expertise and open new doors.



### Never stop learning

The self-confidence gained from setting and accomplishing goals through certification will continue to empower your career. Stay updated with new technologies and industry trends.



### Find inspiration

Learn how earning a Cisco certification has positively changed the life and career for others. View certification success stories to find out the secrets to their success and get inspired to land your dream role in tech!

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# Your certification journey: Beyond CCNA

CCNA is one of many steps you can take on your learning journey. With each step, you build your knowledge base—and your reputation—and become increasingly valuable to any IT organization.

Download certifications poster



## Achieve your potential with Cisco Certifications

You have a goal, and Cisco Certifications get you there. Certifications get your foot in the door, put you on the road to success, and keep you learning for life. So, embrace today's dynamic technologies, find the IT job you want, and the rewarding career you dream about. It all begins with Cisco Certifications and tech learning shaped to you.

### Entry-level

Validate your skills and readiness for the field.

#### Certification Requirements:

[CCNA](#)

200-301 CCNA

### Associate

Master the essentials needed to launch a rewarding career.

#### Certification Requirements:

[CCNA](#)

350-401 ENCOR

#### Core exam:

350-401 ENCOR

(Choose one)

300-410 BN4ISI

300-415 ENSWI

300-420 ENSLD

300-425 ENWLSD

300-430 ENWLSI

300-435 ENAUTO<sup>1</sup>

300-440 ENNC

300-445 ENNA

#### Core exam:

350-501 SPCOR

(Choose one)

300-510 SPRI

300-515 SPVI

300-535 SPAUTO<sup>1</sup>

300-540 SPNCI

#### Core exam:

350-601 DCCOR

(Choose one)

300-610 CIDB

300-615 DCTT

300-620 DACCI

300-635 DCAUTO<sup>1</sup>

300-730 SVPN

300-735 SAUTO<sup>1</sup>

300-740 SCAZT

300-745 SDSI

### Professional

Customize your professional certification by choosing a technology track and concentration exam. This will help you develop specialized skills and boost your expertise.

#### Certification Requirements:

[CCNP Enterprise](#)

[CCNP Service Provider](#)

[CCNP Data Center](#)

[CCNP Security](#)

[CCNP Collaboration](#)

[CCIE Enterprise Wireless](#)

[CCIE Infrastructure](#)

[CCIE Service Provider](#)

[CCIE Collaboration](#)

[CCIE Security](#)

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# Choose your certification level and any specializations

Earning the certification you need can lead you to the career you want. It can also keep you competitive in a field where 92% of IT professionals hold certifications. The Cisco certification portfolio offers more options than ever before, empowering you to customize your learning plan to meet your career needs, interests, and aspirations. Since every Cisco exam you pass earns you a certification, each of these milestones you reach tells a new chapter in your story.

## Here are the different levels of Cisco certifications to choose from:

### **Entry**

Validates your skills and qualifications for entry-level IT roles

### **Associate**

Proof that you've mastered the essentials to build your IT career

### **Professional**

A core technology track to sharpen your specialized expertise

### **Expert**

The most prestigious certification you can earn

### **Specialist**

Advanced networking knowledge in tech such as security, data center, or video

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# Resources to help your studies



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# Study toolkit

We have many resources to help your progress. We encourage you to sign up for the [Cisco Learning Network](#) to be able to access learning resources, including videos, learning plans, and more. For example, the CCNA Training Video learning plan has over 58 hours of self-study preparation tools and content.

We've also provided a vocabulary list and a command-line cheat sheet to help your studies.



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# Vocabulary

Knowing these key vocabulary terms will help you on your CCNA journey.

### **Application Programming Interfaces (APIs) and REST APIs**

APIs are published instructions to interface with a product or service. APIs enable developers to assemble a command or request for a service or data, to submit it, and to receive any output. They are published and maintained by the vendor.

### **Attack surface**

A collection of all the possible paths a hacker or a malware application might follow to compromise protected data.

### **Authentication (Authentication, Authorization, and Accounting [AAA], Radius)**

Authentication is how you control access to your network and prevent intrusions, data loss, and unauthorized users.

### **Continuous Integration / Continuous Development (CICD)**

A CICD system provides automated builds and tests for creating software, making configuration changes, or completing other deployment tasks. When using a CICD pipeline, coders can continually merge their changes to a main branch of an existing application, run integration tests on changes, keep changes small, and minimize the potential for problems due to multiple, gated test result requirements.

### **Data formats**

(XML, JavaScript Object Notation [JSON], YAML Ain't Markup Language [YAML]) Common data formats that are both machine-readable and human-readable for providing input to programs and applications using interfaces (APIs).

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# Vocabulary

## DevOps

A combination of Development (Dev) and Operations (Ops), DevOps focuses on automation, regularly allowing failures that can be automatically fixed with mitigated risks, as well as connecting business outcomes to the availability goals for a given system. The DevOps movement makes developers responsible for deployment and has teams use coding workflows and tools to manage infrastructure.

## DNS

The Domain Name Service (DNS) is like a phone book that translates IP addresses into human readable form. For example, [www.facebook.com](http://www.facebook.com) is 157.240.22.35 (IPv4), or 2001:558:feed::1.

## Infrastructure, containers, and virtual machines

Infrastructure is a generic term for the underlying devices, physical or virtual, that provide computing power or storage capacity or networks, used to deliver software or applications. Virtual machines can emulate a computer system and are typically built as images, providing the same functionality as the physical computer. Containers package up software and dependencies into one descriptive file that contains everything to run an application, regardless of the underlying systems.

## IP address (IPv4 and IPv6, classes, Open Systems Interconnection [OSI] and TCP/IP networking stack)

IP Addresses are like street addresses. Every service or server on the internet has a unique address where it can be accessed.

## Malware analysis

The process of determining the functionality, origin, and potential impact of a given malware.

## Network Address Translation (NAT)

IPv4 is limited to approximately 4 billion unique addresses. NAT is a scheme that allows a single address for a network (such as a small business) to be shared by all the users and devices on your network.

## Network data models (YANG, RESTCONF, NETCONF)

YANG is a data modeling language for configuration and state data for network devices. It stands for Yet Another Next Generation. RESTCONF and NETCONF are protocols defined by a standards body, so that you can manage configuration of network devices modeled with YANG.

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# Vocabulary

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## **Packet**

A unit of data that can be sent from one network endpoint to another. A packet has headers, footers, and a data payload, or some other information that it carries. The headers encode details about how to route the packet.

## **Python**

A general-purpose, interpreted programming language. Python emphasizes code readability with whitespace requirements, so it is approachable and powerful. Many network automation applications and tutorials are centered around Python.

## **Role-based access control**

Access to data given to a person based on their job function or role.

## **Router**

A router connects different networks together, providing a route between two computers (or servers) in different networks. Routers build the internet.

## **Routing protocols such as Border Gateway Protocol (BGP), Enhanced Interior Gateway Routing Protocol (EIGRP), and Open Shortest Path First (OSPF)**

Routing protocols provide the overall map and directions for a packet to find the proper destination.

## **Security Incident and Event Management (SIEM)**

An approach to security management that gathers data from multiple sources (such as syslog, device events, and error logs), processes the data (including correlation to identify potential threats), and raises an alert or ticket for further investigation if the threat is deemed to be real.

## **Security Orchestration and Automation Response (SOAR)**

An approach that enables SOC teams to manage tickets raised through SIEM (Security Incident and Event Management) for threat response. SOAR enables automated workflows for responding to threats.

## **Software Development Kit (SDK)**

A platform for writing programs and applications targeting an API. It often includes documentation, configurations, and tools (such as compilers or linkers) to write and execute the code to interface with the API.

## **Subnet**

Subnetting is a scheme for efficiently apportioning or assigning your IP addresses to systems in your organization.

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# Vocabulary

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## **Switch**

A switch is a component that is used to build a network and to connect hosts and servers within a network. A switch cannot route packets or data between networks.

## **Threat hunting**

The process of proactively and iteratively searching through networks to detect and isolate advanced threats.

## **Threat intelligence**

Evidence-based knowledge, including context, mechanisms, indicators, implications, and action-oriented advice about an existing or emerging hazard to assets.

## **Time-based access control**

Temporary access to data given to a person on a need basis for a period of time.

## **VLAN**

A Virtual Local Area Network is a simple scheme to build in access control and restrictions within a network. It allows you to keep “Sales” separate from “Engineering,” for example, and to prevent inappropriate access to data.

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# Sample command-lines

Keep this list as a handy reference when you're prepping for the exam. Each page is organized by the kind of task you need to complete for easy access.

## Basic device access and modes:

### **enable**

Moves from User EXEC mode (Router>) to Privileged EXEC mode (Router#). This is where you can view configurations and execute most show commands.

### **disable**

Returns from Privileged EXEC mode to User EXEC mode.

### **configure terminal (or conf t)**

Enters Global Configuration mode (Router(config)#). From here, you can make global changes to the device.

### **exit**

Moves back one step in the command hierarchy (e.g., from config mode to privileged mode, or interface config mode to global config mode).



Use code CCNACOMM to save 40%\* on [CCNA 200-301 Portable Command Guide, 5th Edition](#), print book or eBook. Offer ends December 31, 2026.

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# Sample command-lines

## Basic device access and modes:

### **end (or Ctrl+Z)**

Immediately returns to Privileged EXEC mode from any configuration mode.

### **line console 0**

Enters console line configuration mode.

### **password <password>**

Sets a password for console access.

### **login**

Requires the password to log in.

### **logging synchronous**

Prevents console messages from interrupting your command input.

### **line vty 0 4**

Enters virtual terminal line configuration mode (for Telnet/SSH access). (The range 0 4 allows 5 simultaneous connections).

### **password <password>**

Sets a password for VTY access.

### **login**

Requires the password to log in.

### **transport input {all | ssh | telnet}**

Specifies allowed remote access protocols.

### **service password-encryption**

Encrypts plaintext passwords in the running configuration.

### **enable secret <password>**

Sets an encrypted password for Privileged EXEC mode (more secure than enable password).

### **hostname <name>**

Sets the device hostname in Global Configuration mode.

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# Sample command-lines

## Basic device access and modes:

### **banner motd # <message> #**

Configures a Message Of The Day banner that appears when users log in. The # is a delimiter; you can use any character not in the message.

### **no ip domain-lookup**

Disables DNS lookup when you type a mistyped command (prevents delays).

### **interface <type> <number>**

**(e.g., interface Gigabit Ethernet 0/1, int g0/1)**

Enters interface configuration mode for a specific interface.

### **ip address <ip-address> <subnet-mask>**

Assigns an IP address and subnet mask to an interface.

### **no shutdown**

Activates an interface (interfaces are typically shut down by default on routers).

### **shutdown**

Deactivates an interface.

### **description <text>**

Adds a descriptive label to an interface.

### **switchport mode access**

Configures a switch port as an access port (for end devices).

### **switchport mode trunk**

Configures a switch port as a trunk port (for connecting to other switches or routers).

### **switchport access vlan <vlan-id>**

Assigns an access port to a specific VLAN.

### **switchport trunk allowed vlan <vlan-list>**

Specifies which VLANs are allowed on a trunk.

### **switchport trunk native vlan <vlan-id>**

Sets the native VLAN for a trunk.

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# Sample command-lines

## VLAN configuration (on switches):

**vlan <vlan-id>**

Creates a VLAN and enters VLAN configuration mode.

**name <vlan-name>**

Assigns a name to the VLAN.

**interface vlan <vlan-id>**

Creates a Switched Virtual Interface (SVI) for a VLAN, allowing it to be assigned an IP address for routing / management.

**ip default-gateway <ip-address>**

Sets the default gateway for a switch (for management access outside its local VLAN).

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# Sample command-lines

## Routing commands (on routers):

**ip route <destination-network> <subnet-mask> {<next-hop-ip> | <exit-interface>}**

Configures a static route.

**ip route 0.0.0.0 0.0.0.0 {<next-hop-ip> | <exit-interface>}**

Configures a default static route (route of last resort).

**router rip / router ospf <process-id> / router eigrp <asn>**

Enables a routing protocol.

**network <network-address>**

Advertises a network into a routing protocol (within the routing protocol configuration mode).

**passive-interface <interface-type-number>**

Prevents routing updates from being sent out a specific interface.

**show ip protocols**

Displays information about active routing protocols.

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# Sample command-lines

## Verification and troubleshooting (show commands):

### **show running-config (or show run)**

Displays the current active configuration running in RAM. This is one of the most important commands!

### **show startup-config (or show start)**

Displays the configuration saved in NVRAM, which will be loaded upon reboot.

### **show interfaces**

Displays detailed information and statistics for all interfaces.

### **show ip interface brief (or sh ip int br)**

Provides a concise summary of IP addresses and interface status (up/down). **Extremely useful for quick checks.**

### **show ip route**

Displays the device's IP routing table.

### **show cdp neighbors detail**

Displays detailed information about directly connected Cisco devices using CDP (Cisco Discovery Protocol).

### **show vlan brief**

Displays a summary of VLANs and their assigned ports on a switch.

### **show mac address-table**

Displays the MAC address table on a switch.

### **show interface trunk**

Displays information about trunk links on a switch.

### **show version**

Displays information about the IOS version, uptime, hardware, and configuration register.

### **ping <ip-address>**

Tests basic network connectivity to an IP address.

### **traceroute <ip-address> (or tracert on Windows)**

Traces the path packets take to reach a destination.

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# So many opportunities not to miss



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# So many opportunities not to miss



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