



CCNA Certification Guide

Top Cisco resources to plan and prepare for certification

Get started



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CCNA Overview

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

Earning your CCNA gives you a solid foundation for any field/role/specialty you want to pursue in IT. It covers the basics, from IP addressing to security and automation. 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:

- Infrastructure Engineer
- Network Engineer
- IT Specialist
- Network Technician
- Network/Systems Administrator
- Business roles in IT organizations, from sales and marketing to the management track



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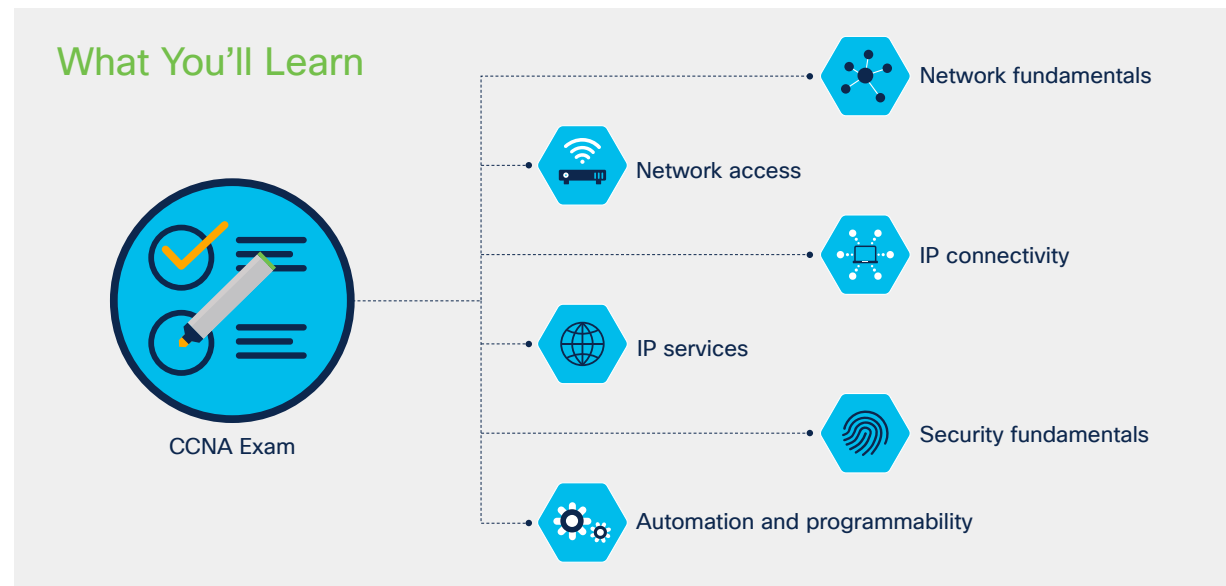
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And while you build your skills, you're also building your income. Here's proof. [The Global Knowledge 2020 IT Skills and Salary Report](#) examined data from over 9,500 technology professionals. Those who obtained a new certification saw their salary increase by nearly \$13,000—a strong indication that training and certifications pay off.

According to the same report, 87 percent of IT professionals hold at least one certification, up from 85 percent in 2019 and just behind the all-time high of 89 percent in 2018. And 99 percent of organizations surveyed use technical certifications to make hiring decisions.

The network needs you. The field of IT is full of rewarding, meaningful, challenging work. Earning your CCNA certification can make your resume stand out and gets your foot in the door.

The CCNA arms you with a broad range of career skills. Get started today.



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Look ahead - Certification Tracks

Cisco Certifications Power the Teams of the Future
Be job ready today, tomorrow and beyond with Cisco Certifications. Fuel your career with the new learning portfolio that unlocks possibilities for both network engineers and software developers. You control where to start and how you learn.

Entry	Associate	Professional	Expert
<p>Starting point for individuals interested in starting a career as a networking professional.</p> <p>Cisco Certification Technician (CCT) Cisco Certification Technician (CCT)</p> <p>CCT Collaboration Required Exam: 100-490 CLTECH</p> <p>CCT Data Center Required Exam: 210-151 DCTECH</p> <p>CCT Routing and Switching Required Exam: 100-450 RETECH</p>	<p>Master the essentials needed to launch a rewarding career and expand your job possibilities with the latest technologies.</p> <p>CCNA Required Exam: 200-301 CCNA</p> <p>Cisco Certified DevNet Associate Required Exam: 200-901 DEVASAC</p> <p>Cisco Certified CyberOps Associate Required Exam: 200-201 CBROPS</p>	<p>Select a core technology track and a focused concentration exam to customize your professional-level certification.</p> <p>Cisco Certified DevNet Professional Required Exams: Core exam: 350-901 DEVCOR Concentration exam (choose one): 300-435 ENAUTO, 300-835 CLAUTO, 300-635 DCAUTO, 300-535 SPAUTO, 300-735 SAUTO, 300-810 DEVOPS, 300-915 DEVOT, 300-620 DEVWEX</p> <p>CCNP Enterprise Required Exams: Core exam: 350-401 ENCOR Concentration exam (choose one): 300-410 ENARSI, 300-415 ENSWI, 300-420 ENGLD, 300-425 ENWALSD, 300-450 ENWAL, 300-435 ENAUTO</p> <p>CCNP Collaboration Required Exams: Core exam: 350-801 CLCOR Concentration exam (choose one): 300-610 CLICA, 300-615 CLACM, 300-650 CLER, 300-800 CLONF, 300-835 CLAUTO</p> <p>CCNP Data Center Required Exams: Core exam: 350-601 DCCOR Concentration exam (choose one): 300-610 DCD, 300-615 DCT, 300-800 DCAQ, 300-825 DCAN, 300-830 DCAQA, 300-835 DCAUTO</p> <p>CCNP Security Required Exams: Core exam: 350-701 SCOR Concentration exam (choose one): 300-710 SMCF, 300-715 SSE, 300-720 SESA, 300-725 SWSA, 300-735 SUPR, 300-735 SAUTO</p> <p>CCNP Service Provider Required Exams: Core exam: 350-621 SPCOR Concentration exam (choose one): 300-510 SPR, 300-515 SPSA, 300-535 SPAUTO</p> <p>Cisco Certified CyberOps Professional Required Exams: Core exam: 350-201 CBROCP Concentration exam: 300-215 CBRRP</p>	<p>This certification is accepted worldwide as the most prestigious certification in the technology industry.</p> <p>CCIE Required Exams: 350-401 CCIE Written Exam, CCIE Practical Exam</p> <p>CCIE Enterprise Infrastructure Required Exams: ENCOR 350-401, CCIE Routing and Switching lab, CCIE Enterprise Infrastructure v1.0 lab</p> <p>CCIE Enterprise Wireless Required Exams: ENCOR 350-401, CCIE Wireless v3.1 lab, CCIE Enterprise Wireless v1.0 lab</p> <p>CCIE Collaboration Required Exams: CLCOR 350-801, CCIE Collaboration v2.0 lab, CCIE Collaboration v3.0 lab</p> <p>CCIE Data Center Required Exams: DCCOR 350-601, CCIE Data Center v2.0 lab, CCIE Data Center v3.0 lab</p> <p>CCIE Security Required Exams: SCOR 350-701, CCIE Security v5.0 lab, CCIE Security v6.0 lab</p> <p>CCIE Service Provider Required Exams: SPCOR 350-601, CCIE Service Provider v4.0 lab, CCIE Service Provider v5.0 lab</p>
<div style="background-color: #e0e0e0; border-radius: 15px; padding: 5px; display: inline-block; margin-right: 20px;">Specialist</div>			
<p>Collaboration Cisco Unified Contact Center Enterprise Specialist Required Exams: 500-440 UCCED, 500-450 UCCES</p> <p>Data Center Cisco and NetApp FlexPod Design Specialist Required Exam: 500-173 FPDESIGN</p> <p>Cisco and NetApp FlexPod Implementation and Administration Specialist Required Exam: 500-174 FPIPADM</p>		<p>Customer Success Cisco Customer Success Manager Required Exam: 500-600 CSM</p> <p>Cisco Renewals Manager Required Exam: 700-920 CRM</p> <p>Meraki Solutions Specialist Required Exam: 500-220 ECRM</p>	

Download poster

As you can see, 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.

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Cisco certifications are available in multiple levels of expertise and various professional areas.

Earning the certification you need can lead you to the career you want. It can also keep you competitive in a field where 87% of IT professionals hold certifications (GK). Cisco's certification portfolio offers more options than ever before, empowering you to customize your learning path 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 Cisco certification levels you can earn:

[→ Associate](#)

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

[→ Professional](#)

Focus on a core technology track to sharpen your specialized expertise

[→ Expert](#)

The most prestigious certification you can obtain

[→ Specialist](#)

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

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Vocabulary

Knowing these key 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 (CI/CD)

A CI/CD system provides automated builds and tests for creating software, making configuration changes, or completing other deployment tasks.

When using a CI/CD 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).

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 also has teams use coding workflows and tools to manage infrastructure.

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DNS

The Domain Name Service (DNS) is like a phone book that translates IP addresses into human readable form. For example, `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.

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.

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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 for threat response. SOAR enables automated workflows for responding to the 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.

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 intelligence

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

Threat hunting

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

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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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Training Options

This is where the real work happens. You'll need two things: the [exam blueprint](#) as well as a strategy for learning, studying, and practicing. We highly recommend that you use the [CCNA exam blueprint](#) to guide your approach to certification. [Download](#) the complete list of CCNA exam topics, track your progress and focus on the material you need to know for the exam.



Keep this in mind: 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.”

There are several training options to help you prepare:

- [Cisco Guided Study Groups](#) offer you a 180-day journey of certification preparation. This approach offers a best-of-all-worlds path toward certification, with the flexibility and convenience of e-learning plus the motivation and accountability of working with a live coach.
- Use the [Cisco Learning Locator](#) to find instructor-led courses—both in-person and virtual.
- If books are your thing, check out the Cisco Press [CCNA 200-301 Official Cert Guide](#), a perfect addition to your self-study plan.
- Browse available self-paced e-learning courses from the [Cisco Learning Network Store](#).
- The [CCNA Preparation Bundle](#) helps you prepare for the 200-301 Cisco Certified Network Associate (CCNA) exam. For a limited time, save 16% off the bundle price.



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.

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Exam Overview

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.

The [CCNA exam blueprint](#) is essential in preparing for the certification exam. If you can successfully complete the tasks defined for each topic, you're ready for the exam.

And now you can take certification exams online, so you can stay on track, even when you can't travel to a testing center.



Visit www.cisco.com/go/onlinetesting to perform a system check.

During the exam, it will be just you, your knowledge, and experience against the test. Keep track of the time, read each question carefully, answer each one (and if you don't know the answer, try to eliminate one or more options and then guess), and keep moving to the end.



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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[→ CCNA Essentials](#)

Still thinking about getting certified? Click CCNA Essentials for more details about the program. It will help you make the best decision.

[→ CCNA Prep](#)

Already decided to get certified, and want to start studying? Click CCNA Prep to find the ultimate resources to develop your self-study plan.

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 maps and more. Just as an example the CCNA Training Video learning map has over 52 hours of self-study preparation tools and content.

Other CCNA resources include:

[Associate Certifications](#)[CCNA Certification](#)[Cisco Learning Network CCNA community](#)[CCNA Certification Training Videos](#)[Certification Blogs](#)

Stay connected through:

[in LinkedIn Group](#)[f Facebook](#)[t Twitter](#)[→ Cisco Learning Network](#)**TIP**

Use code CCNAGUIDE to save 35% on CCNA 200-301 Official Cert Guide Library at www.ciscopress.com/ccnalibrary.

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These are exciting times to be working in technology. The IT landscape evolves daily, but through it all, knowledge of routing and switching remain the core foundation on which you can build your career.

So many vibrant technological developments culminating all at once can seem overwhelming. You need to be able to catch the wave of change and ride it smoothly. This is precisely why we believe right now is the best time to explore how training and certification can keep you focused and help make you a technical superstar in your organization.

Earning a CCNA is the gateway to a rewarding and lucrative IT career. With your CCNA, you'll be more knowledgeable and confident about all things IT.

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

But beyond that, training and certification can transform your life. By learning the latest methods and skills in IT, you'll gain the self-confidence that comes from setting goals, then accomplishing them. And that self-confidence will continue to empower your career.



Ask your manager to sponsor your training. Once they understand the benefits to your organization, they will be eager to learn more and support you with next steps.



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