CCNA

A Comprehensive Beginners Guide To Learn About The CCNA (Cisco Certified Network Associate) Routing And Switching Certification From A-Z

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Introduction

I want to thank you for purchasing this book, *CCNA - A Comprehensive Beginner's Guide to Learn about the CCNA (Cisco Certified Network Associate) Routing And Switching Certification From A-Z.* I hope you find the book informative and helpful to learn and understand about CCNA successfully. The primary idea behind this book is to help you acquire your certification in the exams and become a Cisco certified network engineer.

If you are anything like me, then you must have developed some love for the digital age and the networking life, where everyone gets connected in an instant. The World Wide Web has changed the way the world operates and the best part is that it is available to us at the click of a button. It is true that with the advent of technology, the need for producing, uploading, streaming and downloading data has become the "it" thing. What is it that you do then? Enjoy it face front? Well, a large part of the population uses this technology and network, but very few of us actually know how it works. But there are also a few who love to stay in the background and study it along with using it.

The best part is that these users not only study how it works, but also build it for you. They build intrinsic products that you can only dream of. While you are focused entirely on using products such as YouTube, Google etc, these software and network engineers are focused on making your experience better.

Do you often find yourself thinking, "How does this platform handle this large amount of data?" Well, the answer is, these people in the background build the connections and the servers for us to store our data and continuously keep it running.

So prima facie it sounds simple, but it isn't as simple or easy. A lot of effort goes into it. The current IT industry in the US holds a valuable place in the GDP contribution of the nation. Of the $3.8 trillion of US GDP, the IT sector accounts for $1.4 trillion and provides over 105 million jobs in the country. Since 2014, the IT sector contributed to a whopping 14.6% growth in the GDP. It is a given that the US is the leading nation in creating and supplying the most advanced hardware and software all around the world.

If there is one role in the IT sector that is notable, then it is that of the Network

Engineer. This role is responsible for installing, supporting and managing the network and computer systems that keep the information going. They play a crucial role in implementing and maintaining network hardware and software solutions and also troubleshooting problems that arise in network installation and maintenance. They also ensure network safety, security and help maintain performance standards in the organization.

While the changing economic times propose to be very challenging, organizations try to retain and hire new network engineers and administrators to optimize the existing systems. They also work towards reducing costs, which can eventually increase productivity with the same resources.

In a healthy economy, companies try to improve or strengthen their competitive advantage by implementing new network technologies that create opportunities for network administrators and network engineers to install, optimize and secure the newly installed systems. Since there is such a high demand for network engineers, which has nothing to do with the economy, there has been a spike in employment opportunities as network engineers. It has even gotten the moniker of a ‘recession-proof career.’

If you want to be in the right place at the right time, and want to give your networking skills a try and turn it into your passion, then network engineering is the job for you. The best way to get started is by joining one of the world’s largest network companies to find your path to success. As the demand for network engineers is now on the rise, it is an ideal time for you to advance your career in network administration and take up courses that specialize in training and offer degrees in this program. One such highly esteemed network administration course is the CCNA program. By taking this course, you will be certified as a CCNA-trained associate, which will open up numerous opportunities into the world of networking and switching.

This book is especially designed to guide you in understanding the basic requirements for you to qualify as a CCNA-trained associate. It also takes you in the world of Cisco, where believe me, if you don’t know the different types of products and services they offer, you will have a hard time to catch up with the course. It is known that even with the necessary certification, knowing your company in and out will help you to secure the job of your dreams. This is seen as being participative and contributing to the problems, not just in the department you work in, but where your skills can be put to good use.

By practicing the methods prescribed above, you will find yourself doing well in no time. This book is designed to answers questions with regards to the topic CCNA routing and switching, in particular. It includes questions regarding the content of the exam, why you need a certification, what are the different CCNA exams, how to attain certification for each and what exams can be taken to get the certification. We will also be venturing into the know-how's of writing the exam and preparing for your CCNA exam. We include tips and tricks on how can you ace your exam while also busting some myths/FAQ. So without any ado, let us get started and get onto the journey of learning all about CCNA.

Thank you once again for choosing this book, wish you loads of luck in your journey to become a successful network engineer.

Chapter One: An Introduction to Cisco

In 1984, two Stanford graduates named Leonard Bosack and Sandra Lerner, then a married couple (who eventually got divorced), founded the Cisco Networking Company. The couple graduated in 1981 and initially worked at Stanford, heading two different computer departments. As a means of communication, they found a way to connect their respective computer network using router technology that was devised in the year 1970. Bosack and Lerner realized that the inter department router technology could be used to make a large-scale profitable business outside Stanford University. That is when in the year 1984 the couple founded a company called Cisco Systems. After this the Stanford University gave the proprietary software rights to Cisco Systems.

In the year 1985, Cisco sold its first product called Interface Card to the Digital Equipment Corporation's computer, which was its first big success. It served multiple network protocols, which came out during the following year. The company needed cash for its expansion, which was offered by a venture capital

firm called Sequoia Capital. After this incident, Sequoia Capital took effective control of the company in the year 1987 and installed John Morgridge as the president and CEO of the company the following year. Though he proved himself to be an able CEO, he found it difficult to get along with both the founders. After Cisco sold its first share of stocks to the public Lerner was ousted from the company and eventually Bosack also had to quit.

By the mid-1990s Cisco proliferated by introducing the new and improved 7000-model router in 1993. They also began acquiring companies in that year. They first purchased a company called Crescendo Communications, which gave Cisco access to network switching technologies. The company then relocated its headquarters from Menlo Park, California to San Jose after Morgridge was replaced by John T Chambers as the CEO. The newly appointed CEO believed in growth by acquisition strategy; hence in 1998, Cisco bought Selsius Systems, an internet expertise company that helped Cisco take a dominant position in the VoIP technology industry.

In 2006, Cisco introduced a video conferencing tool called TelePresence, which allowed people from different locations to interact with each other, making them feel they were in the same room. Cisco Networking Enterprises eventually became the leading power in what is now called IoT or the Internet of Things, which later allowed the company to shift its focus from hardware to software.

While the background of Cisco made it what it is, the products and services offered by Cisco have made the company a leader in the industry. In the next chapter, we will get to know the profile of all the products and services offered by the company in detail.

Facts About Cisco

Did you know that love was the motivational factor for the inception of Cisco? It all began when the couple that created Cisco, Leonard Bosack and Sandra Lerner, wanted to stay in touch with each other via email. This brought about the need to connect various networks, and it led to the invention of the world's first multi-protocol router. Well, the saying, "necessity is the mother of all invention" couldn't be more apt. Two years after its conception, the first product of Cisco - the AGS Router - was shipped.

Does the name Cisco sound oddly familiar to you? The name of this company comes from one of the most pleasant cities in northern California. Yes, it is precisely what you are thinking. The company gets its name from the city of San Francisco - the trade and financial center of the US.

If you take a moment to look at Cisco's logo you may notice that it was inspired by the Golden Gate Bridge of San Francisco. It certainly seems appropriate that the company's name and logo are derived from the name of the city that the creators of Cisco love and adore.

Another interesting fact about Cisco is that the founders are no longer the owners of the company. The company went public in 1990. Once this transition happened, Lerner was fired from her job, and Bosack quit to show his solidarity with her. The founding members moved away, and they sold about 2/3rd of their stake in the company for $170 million. The estimated value of those shares today runs in billions, and as of 2014, 2/3rd of Cisco's share stood at a market value of a whopping $90 billion! Since we are on the topic of financials, Cisco's revenue was around $12.5 billion for the end of the fourth quarter in 2015. Also, it provided services and products totaling to $2.9 billion and $10 billion respectively. Since then, Cisco's revenue has been steadily increasing. The last reported revenue for Cisco was $49.3 billion.

Not many are aware of it, but Cisco has acquired over 170 companies and Crescendo Communications was its first purchase (1993). Cisco also acquired ParStream and Lancope to expand upon its plan of "Security Everywhere."

Cisco's reach is quite massive, and it boasts of having over 71,000 employees on board, more than 70,000 channel partners and is present in over 160 countries across the globe with over 360 locations.

Differences Between CCNA And CCNP

The CCNP and CCNA certifications are the most prestigious certifications you can obtain in the IT industry. Based on the level of the individual, there are some differences between these certifications.

CCNP and CCNA stand for Cisco Certified Network Professional and Cisco Certified Network Associate respectively. Every individual in the IT field is aware of these terms since they are valued and respected certifications. An individual must go through a written exam, that is strenuous and long, and a set of lab examinations. The individual's expertise is only assessed after five rounds of tests. Each round will define the individual's expertise.

The CCNA examination will certify that the individual has a good understanding and can work with buttoned and medium-range router systems. This certification will also let the employer know that the individual can install and activate the different systems in the network. In the same way, the CCNP certification will let employers know that the individual can work with and maintain area networks, like LAN and WAN. This certification also shows that the individual can work with advanced solutions like voice, security, and wireless.

CCNA And CCNP Certification Training By Specialist

Individuals with these certifications can work as system engineers or network engineers, and these roles are prestigious positions in the IT industry. Additionally, the CCNA examination will require the individual to be aware of security threats, wireless ideas and how systems can connect to the WAN or wide area network. This individual will also need to know different protocols like SLIPFR, EIGRP, VLANs, ACL's, RIPv2 and so on. It is vital for them to know these protocols well.

If you want to sit for the CCNP certification, you should be CCNA certified. You must also have experience in the field for a year before you appear for the CCNP examination. CCNA does open new doors for you in the IT industry, but if you have the CCNP certification, you can improve your chances of obtaining the best job there is in the IT industry. This is because there are very few individuals who are CCNP certified and because of this the demand for CCNP certified individuals is increasing.

It is important to remember that Cisco systems and products are complex items. It is for this reason that a team of individuals is required to work on these systems and products. If you have a CCNP certification, many companies will want to hire you because you will have a deeper understanding of these systems and products. Once you obtain the CCNP certification, you can tell people that you know how to install, organize, function and even troubleshoot a complex Cisco network. It is for this reason that this certification is essential to obtain. The CCNP examination is only for two hours, and once you clear this examination and are CCNP certified you will have more prospects. This is the significant difference between the CCNA and CCNP certification. That being said, you must start by clearing the CCNA certification before you can pursue the CCNP certification.

Chapter Two: Products and Services Offered by Cisco

Networking Solutions

Networking

Cisco provides various options for a company's networking needs. A few of them are listed below. To meet the technological needs of companies that require data storage, access points, and servers to connect various systems and to provide VPN access, the following products are designed by Cisco.

Networking

Through effective networking, you can be assured of smooth business transactions and information flow. Cisco offers wide varieties of networking options that allow a company to not only automate its network, which provides business agility with scale, but also decrease the WAN cost by a high fraction. It also assures higher performance from the network. With the networks built with such detail, they can detect and mitigate any imminent threats that may cause damage to the company.

Switching

Finding the right switch for your company is everything, with data being the most critical aspect in a growing business world. It is essential to select the right switch to avoid threats faced by the company - now and also in the future. Through Cisco System, companies can simplify the management of their requirements for mobility, IoT, data center and cloud.

Routing

This product is for networking products designed for LAN, WAN, and cloud. It includes integrated security, application optimization, automated provisioning

and advanced analytics which deliver a complete and proven solution to your organizational requirements. Companies can now automate the process with the help of these routers. These routers also offer application and intelligent path selection, which needs minimal control through customization and programming. High performing routers streamline network operations, which can reduce the cost, speed, and deployment of the branch making the network more agile. It doesn't matter whether one has a small business or a large one; the Cisco Networking solutions can offer a wide range of services that fit any business model.

Wireless

The primary way to access the digital world is through wireless networks. Without it, a business cannot communicate with consumers, employees cannot do their jobs and data is left open for attackers to take over. By using Cisco Wireless Enterprise Technology and Mobility products, you can be assured to get the state-of-the-art access points and top of the line WAN and LAN connections. Cisco takes pride in offering the advantage of cutting edge innovations, which are designed to provide performance and high-end security. The best part of it all is that these can fit any small and medium-sized enterprises to large-scale businesses.

Access Points

With the explosion of IoT devices and mobility, the need for security has also seen unusual growth. The Cisco Catalyst 910 access point exceeds the new W1-Fi 6 wireless standards and provides radio frequency excellence to high–density environments. These points provide the performance to increase employee productivity that allows transmitting data at higher speeds and at an increased capacity. These access points provide high-end security for the data that is being transmitted, and efficient data transmission allows upgrades to the technology much easier than in olden times.

Outdoor and Industrial Access

Allows you to not only get data access anywhere but also extends Wi-Fi outdoors and can provide connectivity in the most hazardous locations, making it safer for companies to continue their operations in ease. These access points are resistant to high heat and extreme cold temperatures making it optimal for your data transmission performance.

Wireless Controllers

As the world is geared up to go wireless, the Cisco Wireless Controllers are here to provide secure networking options with simplified segmentation which can detect encrypted threats. They are easy to access and can be enabled even on the cloud. They are designed to get faster insights, which troubleshoot any problems in quickly and thus deliver personalized experiences. These are also designed to have easy upgrading without any interruptions.

Networking Management

Cisco strives to improve operational efficiency and reduce downtime by using leading class products and solutions and managing an enterprise network. These products and services are designed to fit any size organization and to access improvised digital networking processes and systems. Through this Cisco provides opportunities to automate policy-based application profiles, which allow the IT team to respond quickly to new business opportunities.

Optical Networking

Cisco is currently a massive company with optical networking acting as only a smaller part. Although it is one of the leading companies in traditional optical networking, its deep balance sheet and assets - including the data, software, routing, and transportation - provides them a unique opportunity as the industry evolves to next generation optical infrastructure.

Interfaces and Modules

Cisco aims to deploy advanced network capabilities, which can help the business deliver new services by lowering the costs and thus reducing the ownership costs.

Security

The world is now data driven and the safety of consumer’s data has become the topmost priority. Cisco provides solutions that can change the face of data

protection. One of the most significant security issues being faced by many companies is that of a cyber threat, which is becoming much smarter and more dangerous. With Cisco's integrated portfolio and industry threat intelligence, you get the scope, scale and capability to keep up with the complexity of every kind of threat.

Next Generation Firewall

Cisco Firewall keeps the business moving while keeping it secure. A business can get broad network and security visibility and ability to stop the most advanced threats. Using next-generation IPS and advanced malware protection to continuously monitor suspicious activity, Cisco lets companies automate their network settings and allows them to carry on their work with less worry. The security firewall takes the responsibility of taking care of your data.

Advanced Malware Protection

This allows companies to get advanced sandboxing, real-time malware blocking and global threat intelligence to protect from breaches. Since companies cannot prevent threats alone, Cisco ensures analyzing every file, quickly detecting, containing and removing any possible threats to the system.

VPN Security Clients

Threats can occur through various attack vectors, so companies need secure connectivity and active protection for the endpoints. On average when others can detect threats in 100 days, Cisco can provide such details on threats in just 4.6 hours and process about 1.5 million malware per day.

Advanced Email Security Protection

The primary avenue for attackers is to rely on email to distribute spam, malware, and other threats. To protect from such threats, it is essential to have a strong and powerful email security solution. Through Cisco email security defense against phishing, business email compromising and ransomware, companies can get updates on the security every three to five minutes through Cisco Talos. This Advanced Malware Protection protects against stealthy malware attachments and industry-leading URL intelligence malicious links. It is not only essential to keep the incoming emails safe but also the outgoing mails safe. Cisco email security has robust data loss-prevention and content-encryption to safeguard sensitive information, which helps you comply with government and industry regulations.

Web Security

On every legitimate website, there are advanced threats hiding in plain sight in the form of enticing pop-up ads. The employees or clients may put an organization in trouble by clicking on such ads, which can cause extreme damage to the company's data. WSA Web Security Appliances, powered by

Cisco Talos protects you by automatically blocking risky sites.

Business Collaborations (Collaboration Endpoints)

Cisco is known as the pioneer in technology, which helps to connect businesses across the world through technology. Cisco has over time built several technological solutions that can help a team to come together and work towards a common goal - for individual employees to be able to talk to their peers with less effort. These products include Cisco WebEx Board, Cisco Headset 500 Series, and Cisco WebEx Room Series. Choose the product that suits your company needs, and you are good to go.

Conferencing

Conferencing tool such as WebEx is an open platform that allows companies to integrate features into their unique workflow. This allows the team to collaborate, communicate and work together. This tool connects employees from various countries and provides end-to-end data encryption and protection to keep your work safe. Cisco helps companies to work seamlessly so that the team can meet, share and create.

Customer Collaborations

In this day and age, consumers can acquire anything under the sun. With this comes great difficulty to be fast with our responses to their issues and provide them personalized services. Since the mantra ‘one-size fits all’, contact centers are long gone, and providing customers with personalized care has become the rule and not the exception. Cisco has developed products such as Cisco Packaged Contact Center Enterprise and Cisco Unified Contact Express to enable ease of service.

Unified Communications

People around the globe work together using many collaboration tools. For example IP Telephones for Voice Calling, web and video conferencing, voicemail, mobility desktop sharing, instant messaging, etc. Through Unified

Communication Solutions, companies get an option to integrate all their tools and for a seamless user experience, which helps people to work together more effectively. These tools bring real-time communication to companies from anywhere. Services like conferencing, messaging and chat option are a few of the many everyday business applications. Unified Communications offer on-premise, partner-hosted solutions or as a service which is called UC SaaS from the cloud provider.

Computing

Here is a list of computing technologies provided by Cisco.

Unified Computing

The Cisco Unified Computing Services, or UCS, changes the way IT organizations generally do business. Combining industry-standard x86-architecture servers with storage and networking access in a single unified system. UCS brings an increased work efficiency, reduced price of ownership and scalability into the organization's data center. It improves the server performance using an adaptable, scalable architecture, addresses workload changes through storage capacity, I/O and processing memory while managing converged infrastructure, networks, servers, and storage.

Data Center Automation

Data center automation plays an important role in achieving the business results that every company needs to compete effectively. It automates IT processes across computing, storage layers and in virtual environments effectively. Cisco Data Center Management is designed to give companies the agility they need to act and achieve results quicker. Cisco can support any data center - be it infrastructure to applications to design the right automation strategy for the organization.

Secure Data Center

Corporate employees are now moving away from the perimeter of the organization and accessing data from anywhere around the world making it difficult for companies to secure their data. Since today's data centers are immensely complex, organizations must rethink their approach strategy to security. Through Cisco Secure Data Center, they can utilize faster incident detection by getting complete visibility to all users and network traffic across their enterprise, cloud, and data center. By moving laterally within the data center, it reduces attacks by controlling unauthorized users and advanced threats from entering. It also quickly identifies, blocks and responds to data disruptions and breaches.

Hyper-Converged Infrastructure

The ease of hyper-convergence extends everywhere in Cisco HyperFlex. Be it core, edge or multi cloud, hyper-convergence has been keeping IT at the center of the rapid innovation wherein the current data is everything. In this latest innovation, HyperFlex and Cisco Intersight are designed to meet the exclusive needs of deploying hyper-converged infrastructure globally. Since its inception, it has been named number one in performance. It is known for its adaptable facilities for multi-cloud and can be deployed everywhere with Cisco Intersight.

Storage Networking

Cisco has designed one of the best Storage Networks which has 768 line rate, 32G Channel ports, and delivers both scale and performance. These storages have built-in hardware-based analytics that enable faster troubleshooting and

resolution. It also offers greater flexibility with multi-protocol innovations, which provide support for 32G fiber channel, 40G FCoE and NVMe over the fabric.

Virtual Networking[1]

Cisco gives a comprehensive arrangement of virtual networking solutions to streamline management and to safely scale their enterprise data center for private and hybrid clouds. It has stretched out the network edge to the hypervisor and virtual machines and it also gives the establishment virtual network overlays, the Cisco Open Network Environment (ONE) and Software-Defined Networking (SDN).

Cisco Virtual Networking is based on the establishment of the Cisco Nexus 1000V Switch, and it is hypervisor-agnostic. The Cisco Nexus 1000V offers unmistakable focal points, including:

- Broad virtual network services, based on Cisco vPath propelled service insertion and chaining technology
- Backing for a broad scope of hypervisor environments, including open source
- Highlight and management consistency for simple incorporation with the physical infrastructure
- Accessibility in two versions (Essential Edition at no expense, and Advanced Edition)
- Policy management and control by the networking team rather than the server virtualization team (separation of duties)

Data and Analytics

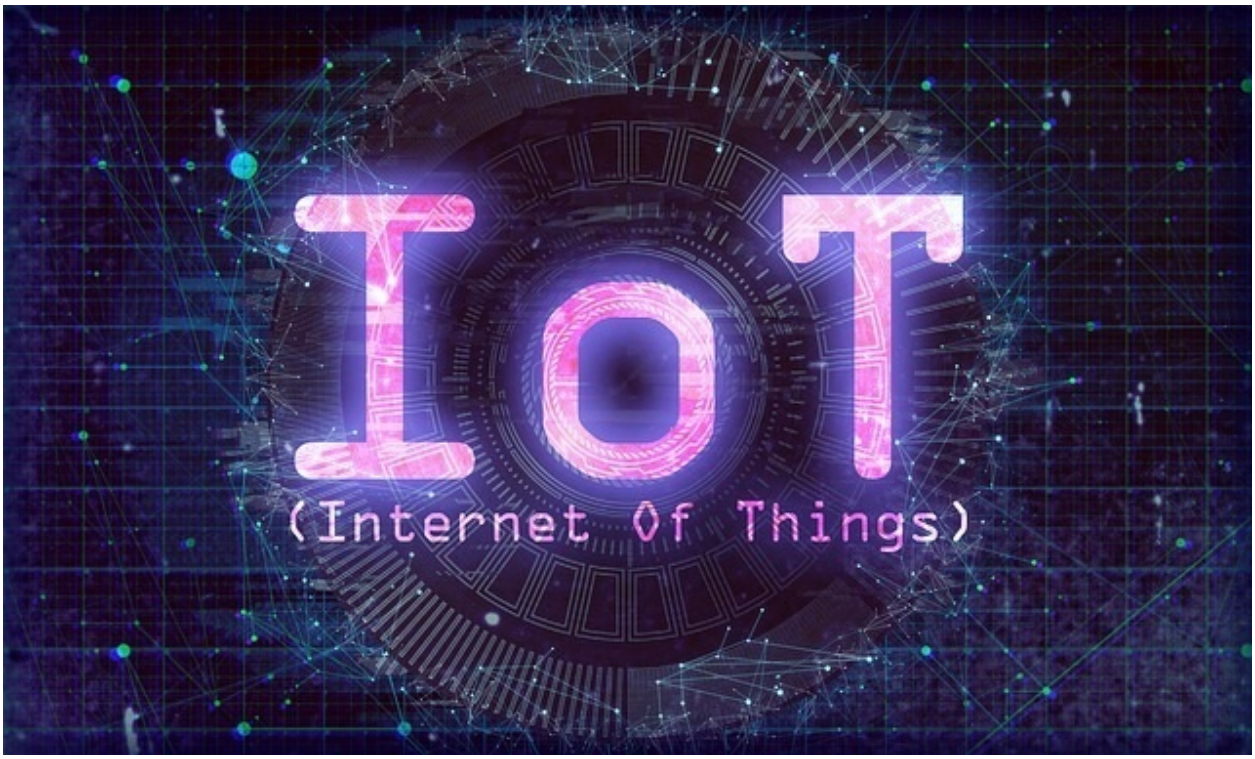
Only through Cisco can any company find and view one's data across the organization and their ecosystem. It helps to get value from the company’s data by leveraging the analytical capabilities from the data center to the cloud to the edge and the fog layer in between. It can also prepare data from any source for processing with any analytics tool. With the help of Data Virtualization, Cisco empowers teams with the critical data they need by providing the way they need

it. Cisco Data Virtualization is agile data integration software, and it makes it convenient to access any amount of data and query through the network of the organisation as if it were in one place.

Data Center Analytics And Assurance

Through Cisco Data Center Analytical tools, companies can now change their operations in their data center to an essentially more practical model with the most inclusive assurance platform. By enabling a zero trust model using process behavior aberrations, segmentation and identifying software vulnerabilities, the multi-cloud data centers also get universal workload protection. These are now available in SaaS models only.

IoT (Internet Of Things)



As indicated by Cisco, 500 billion gadgets will be linked to the Internet by 2030. Every gadget incorporates sensors that gather data, collaborates with the environment and impacts a network. The Internet of Things (IoT) is the network of these associated gadgets. These brilliant, associated gadgets produce data that IoT applications use to aggregate, break down and convey insight, which helps

drive more informed choices and actions. The IoT is a critical piece of business strategy. As evidenced by an IDC investigation of 2300[2] administrators in 15 nations, 48 % of those studies have just sent IoT solutions, and 58% said that the IoT is vital to their business strategy. Efficiency enhancements conveyed through IoT enable you to:

- Speed time to market.
- Improve production network effectiveness and accessibility
- Boost hierarchical adaptability
- Optimize resource usage
- Implement prescient support
- Improve item advancement by replacing outdated equipment, coordinating controls and managing components.

Cisco Software Solutions And Support Software Solutions

Software Application Support Services are critical to keep your business up and running and available at all times. The support services strengthen the functionality and reliability of the existing Software Applications by accessing the latest Cisco software online tools that help you resolve issues quickly and keep the flow of information in the business running smoothly.

Product By Company Type

There has been a spike in the number of startups and medium-sized companies that the US has seen to date. To be able to empower such firms is one of the driving factors of Cisco. This also means that the concept of ‘one size doesn’t fit all’ applies perfectly. Therefore Cisco has come up with products specifically built as per the needs of the organization, thus encouraging the concept of personalization which makes them stand apart from the rest.

Services

Cisco not only offers by-products, but also services that help companies to install software, and to train their employees to maintain the installed hardware and software. Cisco has services that include them acting as an advisory, helping companies implement IT solutions in their organizations, optimize performance and thereby improving efficiency and productivity. Cisco also helps organizations in managing their assets and cloud (or on-premise) services, provides training to the employees to be prepared for the digital shift in the company and provides technical assistance that is much need for the company's overall growth.

Chapter Three: About CCNA Examination

The Cisco CCNA Certification represents the Cisco Certified Network Associate. It is the wide scope of technical specialties offered to the IT world by Cisco. These industry standard confirmations are supported by associations since they show the role's specific insight and competency.

Cisco has two section level accreditations: the Cisco Certified Entry Level Technician (CCENT) and the Cisco Certified Technician (CCT) affirmation. The CCENT confirmation is for system experts who verify that they have the skills necessary to operate network support stations. The CCT implies that the holder can analyze, fix and oversee online essential Cisco networking components.

The CCT is accessible with three specializations: CCT TelePresence, Data Center or Routing and Switching. The most famous CCT certification is the Routing and Switching choice since it focuses on the aptitudes required for on-location support and upkeep of Cisco-brand equipments and systems. This certification teaches experts to effectively work with Cisco switches, routers, cabling and connected adornments. All of these certifications help specialists begin their careers as network experts. They additionally have the essential qualification necessary to opt for a CCNA certification.

Associate-level qualifications for network administration experts are offered for video, voice, industrial, cloud, wireless, server provider, data center, routing and switching. For instance, numerous organizations are utilizing cloud-based innovation to enable them to stay dexterous and adaptable. The CCNA Cloud Certifications are intended for system specialists and directors to progress and extend their cloud-based aptitudes and information. The CCNA Security certification is a fundamental prerequisite for system security experts. Passing the test implies that IT work competitors have what is required to perceive dangers, limit organizational vulnerabilities and oversee complex security frameworks.

The most well-known Associate-level program is the CCNA Routing and Switching certifications. As systems develop, the requirement for qualified system experts who can actualize foundation and oversee network issues is quickly evolving.

Systems administration networks plan video administrations, voice interchanges, and joint effort conditions. The educational content of the CCNA Routing and Switching program are very significant and applicable since preparing modules are in line with the appointed assignments of systems administration experts. Consequently, the program instructs how to plan and design systems, and offers incredible help as specialized masters.

Key information territories and ranges of abilities secured by the Cisco CCNA certification test include the following. Cisco Certified Network Associates should be able to:

- Understand how various system topologies interface to shape a protected IT arrangement.
- Explain how a computer network works and how it cooperates with other networked devices.
- Arrange, check and investigate a switch with VLAN and communications.
- Actualize an IP addressing scheme and IP Services to meet specific system prerequisites.
- Arrange, confirm and investigate routing and router activities on current Cisco gadgets.
- Identify network security dangers and depict risk alleviation strategies and countermeasures.
- Depict and play out the fitting assignments for the Wireless Local Area Network (WLAN) administration.
- Setup and check WAN connections and execute the best possible strategies for associating with a WLAN Administration.
- Actualize and encouraging Network Address Translation (NAT) and Access Control Lists (ACLs) in branch office systems

Chapter Four: Different Types of CCNA Exam

There are different types of CCNA exams that one must pass for an Associate-level Cisco Certification. All these exams form the basis for networking certification.

CCNA Routing and Switching

In this section, you will be introduced to the different levels of certification, different specializations within Routing and Switching, along with their significance and the exams necessary for attaining the desired level of certification.

CCNA Cloud

Numerous organizations are welcoming the Cloud with open arms since it helps them to convey their business results in a manner that is progressive, coordinated, finely attuned and compelling. At present, most organizations are using the SaaS model. As of 2018, over 78% of all the work was being handled on the Cloud.[3]

The CCNA Cloud certification is a job-oriented training program that will help Cloud engineers, administrators and network engineers to not only hone and develop their cloud skillset but also allows them to support their IT department to meet their ever-changing business and technological need.

With a CCNA Cloud certification, you will learn to execute basic facilitation and support of Cisco Cloud solutions. You can learn all this from the only organization that provides the complete Cloud and Intercloud story.

You must take the following examinations to receive this certification.

210-451 CLDFND

This test examines your learning of Cisco Cloud Networks, where you will be tested for your understanding of the DC essentials, basics of UF, UC, Storage, Network Services and Virtualization, Windows Server, Hypervisors, Linux OS; remote connectivity/VPN solutions and documentation of design, the framework fabrications, setups and support strategies.

210-455 CLDADM

This will examine your learning regarding the basics of the Cisco Cloud organization along with Cloud provisioning, remediation, monitoring, reporting, the charge-back formats, and the management.

- Distinguishing the different features of the Cisco Cloud management software solution.
- Understanding the basics of Cloud framework administration.

- The portrayal of detail reporting and charge-back.
- Providing Cloud based on pre-designed templates.
- Perform Cloud management, checking and remediation

CCNA Collaboration

This is designed for network engineers, IP network engineers, collaboration engineers and IP telephony engineers who wish to learn and improve their skills of collaboration and video engineering per the voice, data, and other versatile applications.The Cisco CCNA Collaboration certification is a job-oriented training and certification program. It will enable you to optimize and improve your knowledge along with improving your value as a professional by providing you with the necessary skills and aptitude to help IT organizations fulfill their ever-increasing business needs due to the rapid changes in technology.

You must take the following examinations to receive this certification.

210-060 CICD

This exam is designed to test your knowledge about the Cisco Unified Communications solutions. You will be tested on your knowledge of final-user

and management interfaces, features of telephony and mobility along with the maintenance of UC solutions.

210-065 CIVND

This exam is designed to test your knowledge and skills that are essential for implementing different Cisco Video endpoints present in the United Cisco video frameworks. Apart from this, it will also check your aptitude to execute and resolve Cisco Unified Communication and Collaboration, Digital Media Player and TelePresence in various Cisco business solution models.

CCNA Cyber Ops

At present, almost all organizations are constantly challenged with not only quickly identifying any breaches of cyber security but also with adequately reacting to those threats. All the personnel working in Security Operations Centers (SOC's) vigilantly monitor the security frameworks and protect the organizations by swiftly spotting and retaliating against any cyber security threats or potential breaches. The CCNA Cyber Ops accreditation will prepare you to start working as associate-level cyber security analysts in the SOCs. From July 2018, The United States Department of Defense (DoD) has affirmed the Cisco CCNA Cyber Ops Certification for the DoD 8570.01-M for the CSSP Analyst and CCSP Incident Responder groups.

You must take the following examinations to receive this certification.

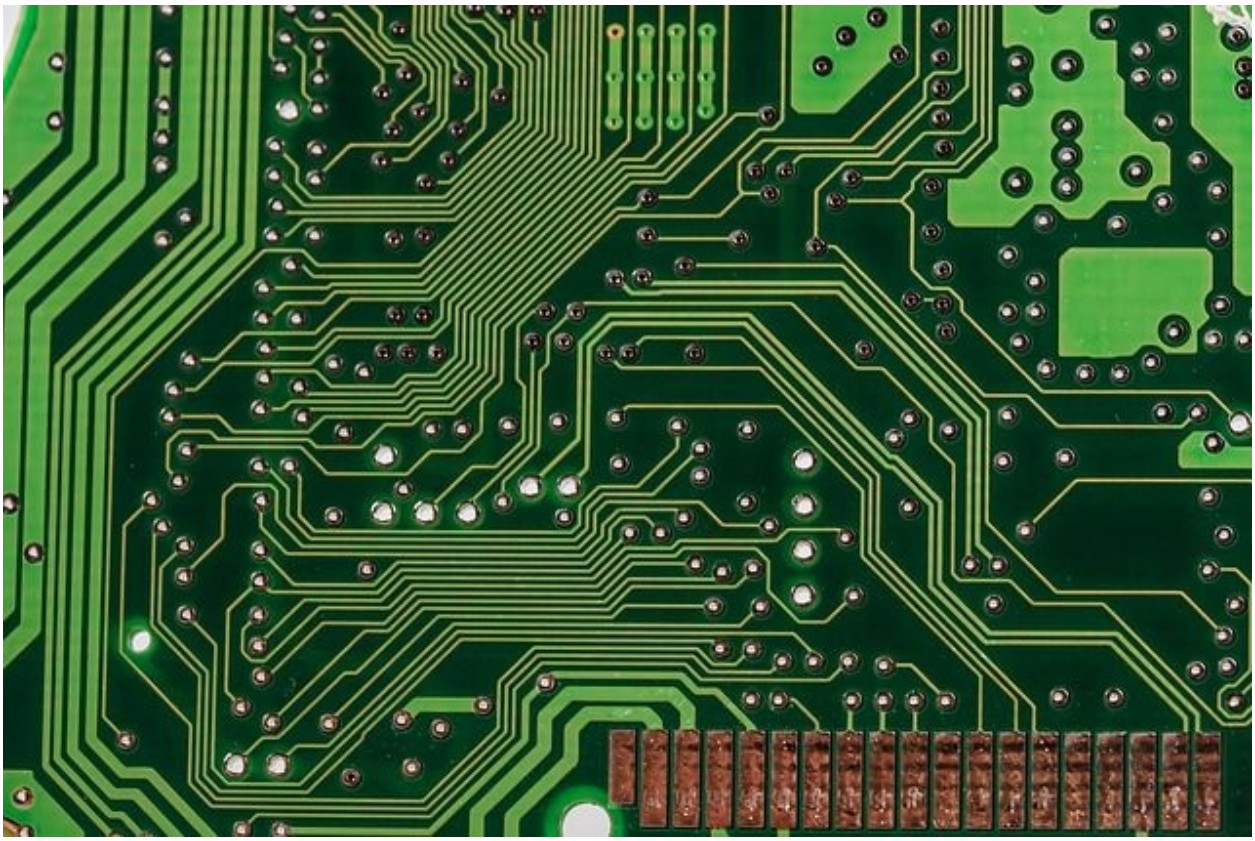
210-250 SECFND

This test is one of the two prerequisite exams that are required for attaining the CCNA Cyber Ops certification and is necessary to secure the job of an entry-level Security Operations Center (SOC) Security Analyst. The SECFND exam tests your understanding of cyber security's primary principles and the fundamental skills essential to understand the more progressive associate-level course materials required for the second prerequisite exam, ‘Implementing Cisco Cyber Security Operations (SECOPS)’.

210-255 SECOPS

This is the second exam that is essential for achieving the associate-level CCNA Cyber Ops Certification, and it will prepare you for the role of an associate-level Security Operations Center (SOC) Security Analyst. This exam tests the knowledge and aptitude required for efficiently handling the different duties and obligations of an associate-level Security Analyst working in a Security Operations Center (SOC).

CCNA Data Center



One of the signs of an effective data center is dexterity and quickness. Designed for quick execution of applications and reinforced by an exceptionally versatile framework, the data center has become the primary focus of organizations that are competing in today's digitized world. CCNA Data Center Certification will give you the assurance and agility that is necessary for installing, configuring and maintaining the technology of a data center. Apart from this, it will help you gain footing in the concepts of data center, infrastructure, networking and technologies, storage networking and unified computing, network virtualization, data center automation and orchestration, and Cisco Application Centric Infrastructure (ACI).

You must take the following examinations to receive this certification.

200-150 DCICN

This exam will test your knowledge about the physical infrastructure, networking, and storage networking concepts of the data center.

200-155 DCICT

This exam will test your fundamental knowledge about the physical infrastructure, networking concepts, automation, and storage networking concepts related to a data center.

CCNA Industrial

The Cisco Certified Network Associate Industrial (CCNA Industrial) Certification is designed for plant administrators, traditional network engineers and control system engineers dealing with process control, assembling, and oil/gas ventures, who will be working along with industrial and IT networks. This certification will provide you with the skills that are quintessential for successfully implementing and troubleshooting the usual industry standard conventions while using the best practices necessary for the connected networks present today.

This module efficiently consolidates theoretical and practical knowledge by using practical lab work. It will give you the necessary skills for working in IT and OT while furthering your knowledge to ensure that the current infrastructures of the organization are efficient while creating a unified front for adaptability that will support the future results of the business.

The prerequisites for this certification are Industrial Networking Specialist or CCENT or CCNA Routing and Switching or any other CCIE certification.

200 -601 IMINS2

The exam will test your knowledge about the concepts and technology that are usually present in an automated manufacturing environment. This exam will cover the Common Industrial Protocol (CIP) and ProfiNET industrial conventions and the fundamental design of the support network infrastructure to optimize the effectiveness of the Industrial Ethernet.

CCNA Security

Cisco Certified Network Associate Security (CCNA Security) will provide the validation of the skills and knowledge that are essential for an associate-level representative to secure the Cisco networks. Armed with this certification, you are able to work as a network professional with the abilities required to develop a security infrastructure, perceive dangers and vulnerabilities to networks and alleviate any security breaches. The CCNA Security educational program emphasizes primary security technologies; the establishment, investigation and vigilance of network instruments for maintaining the virtues; discretion and the accessibility of information and instruments, as well as their competency of all the innovations that use Cisco security structure.

210-260 IINS

Cisco Certified Network Associate Security (CCNA Security) exam will test your knowledge about different aspects of security network infrastructure, your

grasp of fundamental concepts of security, verification of secure access, VPN encryption, firewalls, prevention of any breach and the endpoint security while using SIEM technology, Cloud and Virtual Network topology, BYOD, Identity Service Engine (ISE), 801.1 x Authentication and a other cyber-security related concepts.

This exam will act as a validation of your skills to install, troubleshoot and monitor a secure network to maintain their virtues, discretion and the accessibility of information along with the devices.

CCNA Service Provider

Cisco Certified Network Associate Service Provider (CCNA SP) certification is designed for service provider network engineers, specialists, and planners whose primary focus is on the recent developments, technology, and trends within the Service Provider industry's fundamental networking.

You must take the following examinations to receive this certification.

640-875 SPNGN1

This exam tests your primary knowledge and skills essential for supporting the network of a service provider. To learn more about the exam, please refer to the following link: https://www.cisco.com/c/en/us/training-events/training-certifications/exams/current-list/spngn1.html

640-878 SPNGN2

This exam will test your knowledge and aptitude essential for executing and supporting the network of a service provider. Applicants can get ready for this exam by taking the Building Cisco Service Provider Next-Generation Networks, Part 2 (SPNGN2) course.

CCNA Wireless

Cisco Wireless innovation development places increasing demands on the networks along with the professionals who work to support said networks. To achieve the desired business outcomes, an organization needs skilled wireless professionals who can ensure that this technology is properly configured, monitored, as well as supported. By completing the CCNA Wireless certification, you can enhance your knowledge and skills required for the efficient performance of the Cisco Wireless networks.

Prerequisites for this certification are Cisco CCENT, CCNA Routing and Switching or any other CCIE certification.

You must take the following examinations to receive this certification.

200-355 WIFUND

The exam will test your fundamental knowledge about the installation, configuration and troubleshooting skills necessary for small to medium sized WLAN’s. You will learn more about the CCNA Routing and Switching Exam in the next chapter.

Chapter Five: About CCNA Routing and Switching

Called the holy grail of Cisco Certifications, the CCIE was one of the most difficult certification to achieve and must be achieved before moving on to other networking courses. This overwhelming approach of winning or losing at the test made it impossible to succeed and in turn, predictably did not work out for most individuals. Due to this, Cisco responded to the issue by creating a series of new certifications, which made it easier to achieve the CCIE prize. It gave the employers an approach that could accurately measure and rate the skills of a prospect and a current employee of the organization. This dynamic paradigm shift in Cisco Certification truly opened doors through which only very few were permitted.

From the year 1998, the CCNA Cisco Certified Network Associate Certification became the first milestone certification of its kind. It also became the official prerequisite to meet the propelled levels of the certification, which were then changed in the year **2007** when Cisco declared the Cisco Certified Entry Networks Technicians (CCENT) Certification in March. Cisco announced the updates to the CCENT and CCNA Routing and Switching tests on their website.

The Cisco Routing and Switching was the most prominent certification by a long shot and would have remained this way, however the Data Center Certification turned out to be winner as organizations moved to data-focused technologies. The track record likewise gives a decent show with regards to the circumstances. Understanding the establishment of Routing and Switching before attempting another certification track is something I would like to suggest. All things being considered, you need your CCENT certification to begin progress.

As organizations embrace programmable network architectures, the skill set expected of center network engineers is developing. CLI-based interactions with routing and switching frameworks are offering an approach to controller-based interactions driven by business and application approaches. To satisfy this need, Cisco has refreshed its generally mainstream certification, CCNA Routing, and Switching, to enable IT professionals to completely saddle the intensity of the most recent Cisco technologies. The entrants who let their CCNA Routing and Switching certification slip by will need to focus on these changes. The CCNA Routing and Switching Certification[4] has been refreshed to meet these most

recent changes in technologies:

- Awareness of programmable network (SDN) architectures and the partition of control plane and information plane.
- Expanded VPN subjects to incorporate DMVPN, site-to-site VPN and customer VPN technologies.
- Increased spotlight on IPv6 routing protocols, configuration, and knowledge
- Understanding of cloud assets conveyed in enterprise network architectures
- Knowledge of QoS concepts, including checking, forming and policing mechanisms to manage congestion of various types of traffic.

Once you obtain the CCNA Routing and Switching Certification, you can show your present and future employers and managers that you have the necessary skills to excel in the industry. That being said, you will need to stay abreast of any changes or developments being made in this field to ensure that you stand out and have an edge over your competitors.

One of the prime reasons certification holders let their credentials lapse is because they have held a position where they never again require a present certification. But with technology changing so quickly, this may be the perfect time to reexamine their skillsets and upgrade them from time to time.

Before getting certified for CCNA Routing and Switching, it is important to pass the entry-level examination. After this, there are two more divisions and after passing them you will get certified as a CCNA Routing and Switching Associate.

The CCENT Examination

This may be an entry-level examination that every candidate needs to clear, but do not make the mistake of thinking that this is an easy exam. Perhaps the entry level for Cisco's certification is partially simple, yet it is not for somebody with no experience attempting to break into the exceedingly rewarding yet testing IT field. Most amateurs look at obtaining the Comp TIA A+ and Network+ certifications. This is a good thing to do since you can develop a foundation that will help you when you write your CCNA Routing and Switching examination (this is only true for the new CCNA exam which was developed in the year 2013). You should remember that the exam is hard, and if you do not prepare well for the examination, you will certainly find it difficult to answer questions during the test. You must remember that the newer versions of the examination are harder than the old CCNA examination. You will understand this better when you begin to study for the examination. Once you obtain the certificate, you can be certain that employers will want to hire you. This certificate will also help you move ahead in your career in the networking industry. Therefore, you must work hard and study as much as you can before you pay for the examination. This means that you need to perform adequate research to understand if this is the certification you need and if you can spend sufficient amount of time to prepare for this exam. You must remember that the exams are expensive, and therefore you should make an informed decision.

Cisco Certified Network Associate - Routing and Switching (CCNA Routing and Switching)

Once you obtain the CCENT certification, you can appear for the ICND1 and ICND2 examinations to obtain your CCNA Routing and Switching certification. This is one of the most sought-after certifications in the networking industry. The CCENT examination costs $150, and you cannot pass this examination by reading some material.

These exams are difficult and the questions asked are often tricky to solve. Therefore, you will need to cover different material and scour through exam dumps to test your level of understanding. It is always a good idea to sign up for an online tutorial class since the tutors will help you understand how you should study for and clear the examination. Once you obtain this certification, you can obtain the CCNP (Cisco Certified Networking Professional) certification.

If you choose to take the CCNA Routing and Switching examination, you can land the job you really want. You may not be willing to take two examinations to obtain the certificate. In this instance, you can choose to take the composite examination. It is important to remember that the syllabus covered in this examination is extensive, which means that you will need to spend a good

amount of time in studying for this examination. Regardless of whether you choose to take one exam or two, you must ensure that you have some practical knowledge. This means that you should take as many labs as you can. Additionally, you should focus on taking practice exams and looking at exam dumps to familiarize yourself with the different questions that can be asked in the examination.

Why do you need to become a CCENT and CCNA Routing and Switching Certified?

Cisco designed the CCNA Routing and Switching Certification to help employers gauge their prospective employees' aptitude. These employers can also use this certification to understand if an employee meets some of the necessary criteria for a role. Therefore, if you are someone who is in the networking industry or wants to change roles, you should take the CCNA Routing and Switching examination since that will help you establish a sustainable career. This examination will not only help you understand the Cisco Internetwork Operating System (IOS) and Cisco hardware, but also understand how the internet works. There are some companies that hire employees as network engineers simply because they are certified. Therefore, if you choose to take this examination, and manage to clear it in the first attempt you can land a job in any networking company.

What are the skills required to become CCENT and CCNA Routing and Switching certified?

The ICND1 examination will test your skills and knowledge with respect to a small network. In this exam, you will be asked questions concerning the installation of the network, how the network works and what you will need to do to overcome issues. This exam also focuses on LAN switching technologies, IP services network device security, IP routing technologies, network device security, troubleshooting and the IPv6 protocol. The ICND2 examination will verify if you understand how to install, work with and troubleshoot larger networks. The test will check your understanding of IP routing technologies, LAN switching technologies, IP services (syslog, FHRP, and SNMP v2 and v3), troubleshooting and WAN technologies.

What does it take to become certified in CCNA Routing and Switching

If your aim is to obtain the CCNA Routing and Switching Certificate, you can take the CCNA Composite exam for the certification. This is only one exam, but it is hard to clear since there is a lot of information that you will need to understand and remember to ensure that you can answer a majority of the questions in the exam. The topics covered in the CCNA Composite exam have been taken from the ICND1 and ICND2 examinations.

It is important that you remember that you can take either the composite exam or the two separate exams. You should give it a thought before you sign up for the examination. You may believe that it is easier to give one exam instead of two, and you may clear the exam in the first go if you put in the required effort. You have to practice and work hard. If you wish to take two exams, you will need to clear the following:

1. Exam: Interconnecting Cisco Networking Devices Part 1 (ICND1)
2. Exam: Interconnecting Cisco Networking Devices Part 2 (ICND2)

It is important that you spend some time in understanding what a Cisco switch is. You should understand how a switch works and perform a few simulations to ensure that you are ready.

Where Do You Take your Exam?

Regardless of whether you choose to take the composite exam or the ICND1 and ICND2 examinations, you must register for the exam with Pearson VUE. To learn more about how to do this, please visit the following website: www.vue.com.

If you are certain that you want to appear for the examination, you should follow the steps given below:

1. You should first select the exam that you want to take. If you want to appear for the composite exam you should choose the exam code 200-125. Alternatively, you can sign up for the exam 100-105 and the 200-105 if you want to register for the ICND1 and ICND2 exams.
2. Once you choose the exam you want to appear for, register for the exam. You can also visit the nearest exam center and register there. You will need to pay for your exam in advance, and you should take the examination within a year from the date of payment.
3. You can either schedule your exam six weeks ahead of time or on the day you plan to give the exam. That being said, if you are unable to appear for the exam on the chosen date, you should wait for at least five days before you take the exam. If you know that you cannot appear for the exam, you can send Pearson VUE an email twenty-four hours before the exam. You can ask them to help you reschedule the exam.
4. Once you have scheduled the examination, you will receive all the instructions regarding the process that needs to be followed at the exam center. You will also be told about what identification you will need to bring to the center.
5. You must ensure that you always carry original copies of the document to the center.

Always Use the Material Provided by Cisco Authorized Publishers

It is always important to remember to source the study material from a well-known publisher. It would be a better idea to source the material from a Cisco authorized publisher. This way you will not have to look for other study material since the material you purchase will cover the necessary information. Alternatively, it would be a good idea to sign up for a trainer-led course since the trainer will guide you on how to approach the exam. He or she may also let you know what material you should study from. You can also choose to use the study material links or other information provided on the website.

Chapter Six: Reasons Why You Should Get A CCNA Routing And Switching Certification

Are you aware of the importance of obtaining a Cisco certification? If you are armed with a Cisco certification, it will open up various career opportunities for you and create a strong technical foundation. It offers validation of all the skills that are essential for moving ahead in this tech-oriented world. It will bring in quantifiable results while working as a networking professional. There are multiple benefits of getting a CCNA Certification. As a Network Administrator and Network Engineer, your responsibilities are continually increasing with each passing day and obtaining a certification in CCNA can elevate your status in the organization and may also help you attain a pay raise.

One of the best ways to prepare for a successful career in networking is to obtain the CCNA Routing and Switching Certification. This by itself is a great reason to obtain the certification. There are, however, many more reasons. This chapter

lists the many advantages of obtaining a CCNA Routing and Switching certification.

You’ll Be Certified by the Networking Leader

Cisco was one of the first companies to introduce routing and switching, and it continues to lead the way. It has the largest market share, and most of its products are used by companies across different industries. Overwhelming Internet traffic moves on the different network pathways that are built using the Cisco infrastructure products. If you know how to work on Cisco products and have certifications to back it up, your skills will certainly be more marketable, and you will be in demand.

Certification is the Foundation That Networking Careers Are Built Upon

Many network engineers and networking employees have been trying their best to obtain CCNA certifications ever since CCNA started its different programs and certifications. Studies[5] conducted by IDC state that many networking companies look for different Cisco skills when they are hiring employees. Most employees include Cisco skills when compared to every other skill. It has always been important for employees to have a good understanding of different network protocols and network infrastructure. It is also important to learn how these work together. The need for this is now intensifying. If you obtain a CCNA Routing and Switching Certification, you can obtain the knowledge and expertise required to succeed in the networking industry. This knowledge will also help you troubleshoot any issues that occur within the network.

Learning Curve

In your pursuit of acquiring the CCNA Certifications, you will be able to improve your knowledge and create the foundations for an efficient way of understanding the different fundamental aspects of Cisco networking. Regardless of whether you have years of experience under your belt in the field of networking or not, you will certainly need to keep up with the growing demand for specialized skills to keep up with your competition. The age-old saying, “nothing can substitute experience,” stands corrected when it comes to keeping up with all the innovations and technologies of the digitized world that we live in. It is essential that you keep yourself updated with all the recent technological developments taking place in the IT field.

Before you can think about completing the whole Cisco program, there is a prerequisite that you must fulfill. A lot of Cisco certifications demand that you successfully pass the CCNA exam before you are eligible for anything else. So, the CCNA certification is like the stepping-stone to move ahead in the Cisco Training courses.

Certification Gives You More Career Options

Since the CCNA Certification was started, Cisco Certifications have been warranted by network engineers and organizations alike across the globe. As indicated by an ongoing [6]report from the IDC (International Data Corporation), Cisco abilities are among the most wanted for aptitudes while enlisting potential candidates. This need is increasing by the day. A Cisco CCNA Routing and Switching accreditation will validate your knowledge and expertise about data and ability in networking. When you take up CCNA certification and successfully clear it, you can place yourself as a network administrator capable of troubleshooting network problems prevalent in networking areas and will be able to create the infrastructure to back it.

Once you are the proud holder of CCNA Certification, you will have an edge ov

er others in your field. It can give you better recognition when you are handing out your resumes for any job openings in the field of Cisco networking operations. The three-year validity of this certification will ensure that you have the time to make the most of all the knowledge and skills you have acquired during the certification program.

You will have many career opportunities if you obtain the CCNA Routing and

Switching Certification. Based on a survey conducted by IDC, it was identified that seven out of ten organizations look for certifications when they are promoting or hiring an individual. You can progress to the expert levels in the routing and switching track using the different courses provided by Cisco. You can also use the skills you develop as a routing and switching expert in technologies like Collaboration, Cloud, Network Programmability, Data Center, Security or Wireless. These areas are developing and are propelling the IT industry forward. If you have a certification in routing and switching, you can change the direction of your career at any point.

Certification Prepares You for Network Evolution in the Digital Era

Now that businesses are being transformed through digitization, there is a radical change in network infrastructure. Many manual processes have been replaced with the software-driven network architecture that depends on analytics, automation, visualization, cloud service management and whether the network is open and extensible. IDC revealed that a recent study concluded[7] that the most important roles in the IT industry are network engineers and network architects. A professional who wants to improve his standing in the IT industry should embrace this shift.

Certification Keeps You Current on All the Latest Technology Changes

In addition to bringing about major network architecture changes, for instance, the Cisco DNA, Cisco continuously works on creating IT landscapes conducive to various technological developments that will have an impact on your job profile as a networking professional. Cisco always ensures that it is aware of all the changes that are taking place in technology and the IT industry. It does this to ensure that students are aware of how the changes in technology will affect the certification or their role in a company. The CCNA Routing and Switching exam is not an exception to this. Cisco constantly revises the curriculum to ensure that students are aware of every small change made in the industry. The latest curriculum will give you an understanding of QoS (Quality of Service) elements and how they are used, the network functions and interactions of firewalls and wireless access points and controllers, along with a renewed focus on IPv6 and basic network security. So, all this means that you will be able to keep up with the technological advancements taking place in your organization and industry.

Certification Helps You Stand Out with Your Employer

It isn’t just you who stands to gain by attaining a CCNA certification. It is beneficial for the organization that you are part of. You can ask any potential employer, and they will tell you that a certified professional is competent to work in the highly competitive world of information technology. Once equipped with this certification, you can prove to your employer that you have the knowledge as well as the essential skills for getting the job done.

Your employer will know that you want to excel in your career when you begin to prepare for the CCNA Routing and Switching examination. A manager will notice that kind of initiative. Based on research conducted by IDC, it can be said that close to eighty-two percent of leaders in digital transformation believe that people who have a certification help to accelerate innovation. There is also some credibility that is associated with a Cisco Certification. Many employers use the CCNA Routing and Switching Certification as a criterion to hire a candidate. In this ever-changing world, it will always do you good to have certain additional skills to cement your stand as an expert in your field.

Certification Helps You Learn from Your Peers

Many individuals and professionals are gearing up to prepare for different Cisco certifications. It is for this reason that Cisco has developed the Cisco Learning Network, which is a learning and career development community. There are a million professionals in this community. This community provides valuable support and also helps the members learn, study and prepare for the certification examinations. When you are a member of the Cisco Learning Network, you will gain access to training videos, study groups, a wealth of examination information and peer-to-peer advice.

Certification Gives You a Full Range of Training Options

You can learn in more than one way. There are many Authorized Learning Partners, and each of these partners offer numerous training options that make it easier for anybody to earn their Routing and Switching certification. You can choose to enroll in a virtual classroom, an instructor-led training or hands-on labs for both the ICND1 and ICND2 components of the examination. The Cisco Learning Network Store also offers learning labs, self-paced e-learning and practice exams that will help you prepare well for the certification. Additionally, Cisco Press, which is an authorized publisher, offers a lot of resources that you can use to prepare for the examination. Another wonderful aspect of CCNA certifications is that they give you the opportunity to study and prepare for the exams according to your convenience. You can either opt for a self-paced curriculum or enroll yourself for the training program Cisco offers. You will learn more about this in the coming chapters.

Certification Helps Increase Your Paycheck

Since there is a shortage of talent in the networking industry, the salaries for a networking employee are usually high. If you have a Cisco certification in routing and switching, you can increase your salary. As per a report by[8] Robert Half Technology, in the 2018 Technology Salary Guide, CCNA routing and switching certification is one the most sought after certifications in the industry. This guide also stated that some employers were willing to increase the salaries by five or ten percent if the candidates meet all criterions. Many organizations also offer their employees monetary rewards for obtaining a Cisco certification.

If you are the holder of CCNA certification, then it means you will be able to look out for better career opportunities. Additionally, these qualifications also give you the chances to ask for a salary hike. The employees in an IT team are given their roles based on all the certifications they hold. So, having a CCNA certification will give you the potential advantage of quickly climbing up the corporate ladder. If your appraisal is right around the corner, then this certification can also help you grab a quick salary hike.

Don’t Forget: There Is Value in Recertification

The Routing and Switching Certification is only valid for three years. That being said, you can always recertify yourself. The certificate is only valid for three years since Cisco monitors the industry and does its best to ensure that the certifications it provides always keep pace with the requirements of the IT industry. When you are willing to learn constantly and are happy to recertify yourself, you can ensure that you are aware of every new development made in the industry. You will learn more about the recertification policy of Cisco in the coming chapters.

Secure Your Career Through Routing And Switching

It is important to remember that digital transformation is changing the face of the world. This is especially true in case of the business world since every company should take advantage of the different technology to maintain a competitive edge. In today's world, every business initiative is a technology initiative, and an IT professional is expected not only to stay on top of technology, but also improve different processes and the business.

Businesses now move forward because of the Internet of Things (IoT), which is constantly evolving. The importance of technology like mobility, big data, security, network design, cloud, application development, data center operations, systems or services integration, and enterprise architecture is increasing. So, how does this affect you or your career? Since there are many developments taking place in the IT industry, managers now look to hire people with certifications. These certifications will prove that the individual is aware of all the new developments in IT. They also look for people who have experience in the core routing and switching industry. A recent study[9] showed that there was a shortage of employees with critical IT skills. The managers who were a part of this study also said that they were willing to hire candidates or promote employees depending on their certifications. When you obtain a certification that is important to so many companies, you improve your status in the industry.

Globally Accepted

Another brilliant thing about the CCNA Certification is that it is globally recognized and accepted in different countries across the globe. So, the validity of a CCNA certification doesn’t have any geographical constraints. All those networking experts armed with CCNA Certifications under their belt are in a better position to negotiate for not just a higher pay scale but also better positions in an organization. At present, the number of CCNA jobs open on the market is steadily increasing, and they all require that the potential candidates have some CCNA certification as one of their criteria for job eligibility. You can use the knowledge that you gain through the CCNA Certification as a stepping stone for learning more about different and newer modules of networking and cyber security courses to boost your career. Attaining the first certification might seem rather complicated and also an uphill battle at times; however, once you take the first step, you will be able to get the hang of things. After all, beginning well is half done, and this stands true for CCNA certification.

Unique Way of Learning

The Cisco Learning Network is unique since it is a social network platform that is widely used for learning. This is the future of the Internet, think of it as Internet 2.0. This network offers access to social sharing of information across the globe with various other professionals and students alike. The network also offers a wide array of services like training, simulation labs, corporate internships, job listings, programs for mentorship and recruitment and various other things.

Less-Extensive Outline

Networking professionals always seem to question which of the two is better - Microsoft or Cisco? The Cisco Certification Programs don't include any broad frameworks, which make it simpler for the course-applicant to complete the modules. Since these certifications aren’t extremely demanding, you can also pursue any other additional certification that you might want. When you get Cisco CCNA certified, you can progress towards becoming an expert in other areas of certification in the networking domain. Apart from all the quantitative benefits discussed in this chapter, there is another benefit that you will achieve. This benefit isn’t quantifiable, and it is personal satisfaction. Once you get certified, you will certainly experience a sense of personal satisfaction, especially if you have meant to undertake a professional certification course. Also, don’t you think that you will feel quite proud to add those four magical letters (CNNA) after your name on a business card?

The ever-increasing developments and innovations in the field of networking technologies across the globe foretell an impending shortage of qualified networking professionals. So, what can be a better way to cement your stand as a qualified networking professional than by obtaining CCNA Certification?

The Changing Role Of Core Network Engineers

Many enterprises are now adopting programmable network architectures. It is for this reason that employees will need to develop the necessary skills to work with those architectures. Many companies are getting rid of the CLI-based interactions in routing and switching infrastructures and adopting a controller-based interaction that is driven by application and business policies. It is for this reason that Cisco has updated the curriculum for Routing and Switching to ensure that every IT professional is aware of how to use the technology. People who have not renewed their certification must pay attention to the following changes that have been made by Cisco to the Routing and Switching certification:

- Expanded VPN topics to include DMVPN, site-to-site VPN, and client VPN technologies
- Understanding of cloud resources deployed in enterprise network architectures
- Increased focus on IPv6 routing protocols, configuration, and knowledge
- Knowledge of QoS concepts, including marking, shaping, and policing mechanisms to manage congestion of various types of traffic
- Awareness of programmable network (SDN) architectures and the separation of control plane and data plane

As mentioned earlier, Cisco does its best to ensure that it incorporates the new developments in technology in all the certifications that it provides. When you obtain the Routing and Switching Certification, you can prove to organizations and to others in the IT industry that you are aware of the latest solutions that you can use in the industry. Many professionals do not renew their certificate or recertify themselves since they no longer require that certification. This is, however, a bad idea since you may lose out on future opportunities.

Chapter Seven: The Simplest Way to Earn the Certification

Everybody in the networking industry is aware that a Cisco certification comes with numerous benefits for both the individual and the organization. If you are looking for a way to boost your career in the IT industry, it is important that you complete at least one Cisco certification. Cisco offers numerous certifications that a novice or an expert can complete to enhance their experience in the IT industry. The different examinations offered by Cisco have been listed in the next few chapters in the book.

Since there are different certifications offered by Cisco, it is always good to know what order you should complete them in. The CCENT certification is an entry-level certification followed by the CCNA certifications. The latter are classified as associate level certifications. The CCIP certifications come next and are followed by the CCNA and CCIE certifications, both of which improve an

individual’s career.

The objective of a Cisco certification is to help you improve your IT career. This section will provide an insight into what the CCNA Routing and Switching Certification is about, and will help you identify the path you should take to obtain the certification.

Basics Of The CCNA Routing And Switching Certification

It is always a good idea to earn the CCNA Routing and Switching Certification since it helps to develop your IT career. Most businesses, big or small, are moving towards a controller-based architecture. This means that it is important for you to improve your networking skills to suit the field. You should also remember that the networking field is volatile. It is true that the skills that you need to develop to work as a core network engineer have changed over the years. Therefore, if you can update your skills faster, you can fit into the role easily. Otherwise, you may miss out on some job opportunities or lose your current job.

The Routing and Switching certification will help you understand the different technologies that you can use in networking. This certification does not come with any necessary prerequisites.

You can obtain the CCNA Routing and Switching Certification either by passing one exam or two exams. This is the choice that Cisco gives you. You can either choose to take the composite 200-125 examination or take the 100-105 ICND1 and 200-105 ICND2 examinations.

About 200-125 CCNA Exam

The 200-125 examination is a composite examination, and it combines the ICND1 and ICND2 courses. Most candidates do choose to take this examination. The test will validate your knowledge and skills regarding LAN Switching technologies, infrastructure services, infrastructure security, infrastructure management, WAN technologies, and other network fundamentals. Like every other Cisco certification examination, you will need to answer seventy questions in ninety minutes. These questions will come in different formats – simulations, multiple choice multiple answers, multiple choice single answers and drag and drops. If you work as a network administrator, network engineer associate, network support engineer, network specialist or network analyst, you should take this examination.

Recommended Training

If you want to increase your chances of passing the 200-125 examination, you should take the Interconnecting Cisco Networking Devices: Accelerated (CCNAX) v3.0 course. This course provides information on ICND1 and ICND2 and will help you understand all the topics covered in the exam.

As mentioned earlier, you can also take the 100-105 ICND1 and the 200-105 ICND2 examination to obtain the CCNA routing and switching certification.

100-105 ICND1 Examination

This exam, like the 200-125 exam, is a ninety-minute exam. Unlike the 200-125 exam, you will only be tested on fifty-five items. This exam will test your knowledge and expertise regarding infrastructure services, network fundamentals, infrastructure maintenance, and LAN switching technologies. The format of the questions is the same as those that are featured in the 200-125 examination.

200-105 ICND2 Exam

This examination will test your knowledge and skills that pertain to WAN technologies, LAN switching technologies, infrastructure services, IPv4 and IPv6 routing technologies and maintenance. You have ninety minutes to answer sixty questions.

Exam Preparation

Among IT vendors, Cisco is at the top. It provides you with all the necessary material and tools to help you obtain your certification in the first attempt. It tries to improve the material and the different tools it regularly provides to ensure that you gain the right information. From the Cisco Learning network to self-study materials as well as some exam dumps, you have different material that you can use to clear your examination. Let us look at some tools that you can use to prepare well for the exam.

Self-Study Materials

There are many self-study materials that are available on the Cisco website that will help you obtain the certification successfully. When you are preparing for the CCNA routing and switching examination, you should enroll for different courses like Interconnecting Cisco Networking Devices (parts one and two) and also look at the labs for both those exams. This will improve your chances of clearing the examination. Numerous practice exams are available on the learning network that will help you gauge your knowledge. More information about these courses has been provided later in the book.

Training Videos And Webinars

There are many online training and learning sessions provided by Cisco that will help you obtain the routing and switching certification. Many resources are available on the Cisco Learning Network platform, and these are explained in detail later in the book.

Study Groups

When you join a study group, you can ensure that you have prepared well for the 200-125 examination. These groups will help you develop new connections and build your network. You will also build yourself a support group since you can work together to obtain the certification.

Exam Dumps

An exam dump is as important as the material you choose to read and the group you choose to join. Exam dumps cover every possible question that can be asked in any Cisco examination. It is for this reason that you should use them to prepare for your examination. Once you have understood the different concepts in the material, you can use these dumps to practice different questions that can be asked in the examination. You can always familiarize yourself with different types of questions.

Recertification

It is important to remember that the CCNA Routing and Switching Certification is only valid for three years. That being said, you can extend the validity by earning a higher certification. For example, you can earn a CCIE certification that is valid for two years. This will help you extend the validity of the routing and switching certification by two years from when you obtain the CCIE certification. More details are provided about the recertification process later in the book.

To conclude, there is no limit to what you can achieve once you obtain any CCNA certification. Regardless of what your experience is, you can succeed in the path that you have chosen with the different certifications that are provided by Cisco. If you want to obtain the routing and Switching certification, you will find a good job and will be an asset to the company.

Chapter Eight: Required Learning Material for Your CCNA Routing and Switching

Before you appear for an exam, it is essential to choose the right learning material. It should ideally include information about the exam, the essential questions related to the course, the exam course structure in details and the examination content. This helps the candidate to prepare well and appear for the examination. For your CCNA Routing and Switching Examination, the following are the important factors to have in mind before picking the right material.

Look Out for Free Material

While you prepare for your examination, you might have the notion that you will need the best resources to study, and may rely on expensive books and course material to learn. But many websites are currently offering study materials for this examination free of cost. Before rushing into any purchasing, conduct thorough research either online or in your organization to get the right material without having to pay any money upfront.

Your Peers are Your Greatest Resource

Nothing will compare to the knowledge a certified CCNA Network Associate can provide you. Arrange for a one-on-one session with your chosen mentor to get the right direction, and if possible, borrow their notes and books. This can be very helpful for you during the preparation. Simply address your questions to someone who has already written the examination and look ask for guidance from them.

Mix It Up

The best way to learn something is by engaging all your senses. Choose different mediums of learning, which allow you to be on your toes wanting for more, thus making your learning experience much better. Choose a mix of audios, video, text, graphics and real-time data, which will build a holistic approach of learning from personalized study material during the exam. These mix of resources will make sure you are engaged in the subject.

Keep Yourself Updated

It is always good to be updated with the current technological advancements during the exam. Make sure to keep yourself updated with the happening in the technology and network world. The study materials can only teach you so much; adding relevant information that is current along with theoretical knowledge can go a long way.

Get Practical

It is good to have part of your learning material as a practical subject. If you are already an employee of the Cisco organization, it will serve you as grounds to try and test everything that you see in order to register yourself for the practical information.

The following resources can help you gain access to the required information you need on all topics for your CCNA Routing and Switching Examination.

The Cisco Official Study Material

In the Master Exam List, under the Routing and Switching section, you will find the links towards the material and the syllabus for all the exams. Under the Routing and Switching tab, you have the ICND1 and ICND2 examination and the CCNA Composite Examination kit with all the topics that can help you prepare for the examination. Each of these exams has a percentage contribution of each topic towards the subject that cater to difficult versus easier topics. You can find the link to the master exam here[10].

As organizations are migrating towards a control-based framework, the role, as well as the skills necessary for a core network engineer, are rapidly evolving. This need for skills and knowledge has become more evident than ever. The CCNA Routing and Switching Certification will provide you the knowledge about the fundamental technologies and ensure that your skill sets stay relevant as this network transition takes place.

In this section, you will learn more about the study materials and the training program that you can use to complete your CCNA Certification.

Self-Study Materials

Interconnecting Cisco Networking Devices- Part 1

Interconnecting Cisco Networking Devices, Part 1 (ICND1) is an e-learning portal that's designed to assist you in preparing for the CCNA Routing and Switching Certification Exam for all the topics that are covered within the 100-105 ICND1 exam.

This course is structured such that it will provide you with a basic understanding of the network Layers 1 through 3 that are necessary for core routing and switching along with several other progressive technologies. Various topics have been included in the latest version like the information about understanding the interactions that take place and the network functioning of firewalls, wireless controllers and access points. Apart from this, you will also learn about IPv6 and the fundamentals of network security. You will be introduced to different configuration commands and to make things simpler, you will be provided different examples and related lab exercises.

This course is designed so that the training that you attain will be as effective as classroom learning. The contents of the course are available in the forms of Instructor Videos as well as text that are presented in an easy-to-understand format. Even though this is a self-paced course, it ensures interactivity via questions based on the content review, Challenge Labs with tests that are graded, and Discovery Labs. These different aspects ensure a hands-on learning experience while simultaneously increasing the efficiency and effectiveness of the course. Apart from this, it gives the students a chance to obtain direct feedback about their understanding of the course content. To motivate the students to do better, this module provides inbuilt leaderboard and merit badges.

Upon the successful completion of this course, you will be able to:

- Define the fundamentals of networks and build basic LANs
- Secure as well as manage network devices
- Work on expanding networks that are small to medium-sized
- Be able to describe the fundamentals of IPv6

This course is specially designed for network administrators, network specialists, network support engineers and Cisco channel partners. There are no prerequisites of this course per se but having the skills and knowledge about the following topics will undoubtedly come in handy. The topics are fundamental computer literacy, essentials of PC operating system and navigation skills, primary internet usage skills and the basics of IP addressing systems. The associated certification of this course is CCNA Routing and Switching and the associated exam is 100-1051 ICND1. English, Japanese, Chinese and Spanish are the languages supported by this module. At present, the instructional videos are available in English and Spanish.

Cisco Learning Labs for ICND1

This entire set of Cisco IOS Software labs were created to help students to prepare for their ICND1 (100-105) examination. These labs are powered by the Cisco IOS Software equipped with Layer 2 and Layer 3 features, are supported by CLI and are accessible 24/7, so, you can study and learn at your convenience. The set of labs available in this section will help you gain proficiency in configuration, management and the troubleshooting of Cisco switches and routers. This training product comes with Discovery Labs and Challenge Labs. The Discovery Labs provide guided learning so that you can learn about different concepts and the Challenge Labs will help test your understanding of all that you learn- theoretical knowledge as well as practical application of skills to further your understanding of all topics related to the CCNA Routing and Switching Certification.

This lab curriculum consists of 45 different pieces for you to go through and is in line with the learning objectives required for the 100-105 ICND1 examination. Once you clear this exam, you will be eligible for a CCENT certification.

Interconnecting Cisco Networking Devices- Part 2

Interconnecting Cisco Networking Devices, part 2 (ICND2) is an e-learning portal that is designed to assist you to prepare for the CCNA Routing and Switching Certification
Exam for all the topics that are covered within the 200-105 ICND2 exam.

This is an associate-level self-paced technical course and is part of the course

curriculum of the CCNA Routing and Switching Certification. It gives network administrators the necessary skills and information required for installing, configuring, operating and troubleshooting the network of a small enterprise. A couple of significant additions have been made to the existing course curriculum. These are information about Quality of Service (QoS) elements and their application, the interaction and impact of virtual and cloud services on the enterprise's network and the overview of programmability of network and associated controller types and tools available to support any network architectures that are defined by the software.

The course is structured similarly to ICND1 and pon the successful completion of this course, you will be able to:

- Work with medium-sized LANs with various switches supporting VLANs, trunking and spanning tree
- Solve problems related to IP connectivity
- Understand the configuration and troubleshooting of EIGRP in an IPv4 system and the configuration of EIGRP for IPv6
- Successfully understand the traits, functions and different aspects of WAN
- Understand the ways in which device management can be executed by utilizing conventional and smart technology

There are no prerequisites of this course per se but having the knowledge and skills about the following topics will undoubtedly come in handy. The topics are fundamental of networks, implementation of local area networks, implementation of internet connectivity, management of devices, knowledge about securing network devices and the implementation of IPv6 connectivity. The associated certification of this course is CCNA Routing and Switching and the associated exam is 200-1051 ICND2.

English, Japanese, Chinese and Spanish are the languages supported by this module. At present, the instructional videos are available in English and Spanish.

Cisco Learning Labs for ICND2

This entire set of Cisco IOS Software labs were created to help students to prepare for their ICND2 (200-105) examination. These labs are powered by the

Cisco IOS Software equipped with Layer 2 and Layer 3 features, are supported by CLI and are accessible 24/7. Again, when it comes to self-study, the module structure cannot possibly be more convenient than this. This is the second part of the ICND labs and will help you get better acquainted with configuration, management and the troubleshooting of Cisco routers and switches. Like the previous training product, this one is a combination of Discovery Labs and Challenge Labs. These two things will help you learn and then enable you to test yourself on the topics learned. This lab curriculum consists of 44 different pieces for you to go through and is perfectly aligned with the learning objectives required for the 200-105 ICND2 examination. Once you clear this exam, you will be certified for the CCNA Routing and Switching Certification.

Certification Practice Exams

MeasureUp provides Cisco Certification Practice Exams to help test your level of understanding and skills by providing you Cisco technology topics (these aren’t the questions that might come in the final exam) that are related to various certification exams offered such as Cisco CCENT, Cisco CCNA Routing and Switching, Cisco CCNP ROUTE, Cisco CCNP SWITCH and Cisco CCNA Security.

Apart from this, Cisco also offers an extensive network of learning resources that include CCNA study material, CCNA Routing and Switching study sessions and access to all the latest blogs about CCNA Routing and Switching.

Training

The best way to prepare for the CCNA Routing and Switching Certification is by participating in the training programs approved by Cisco. You have two options when it comes to training provided by Cisco. You can either enroll yourself for the two training modules - ICND1 and ICND2 or opt for the CCNAX.

Interconnecting Cisco Networking Devices Part 1 (ICND1)

This course will provide you with the fundamentals of network layers 1 to 3 that are critical for routing and switching. Apart from this, it also provides the basics that you need before you can start learning about advanced technologies. The course structure provided in this training module is the same as the one that you were provided with in the self-study material for the ICND1 course (please refer to the information discussed in the previous section about ICND1 for more information)

Interconnecting Cisco Networking Devices Part 2 (ICND2)

The course structure provided in this training module is the same as the one that you were provided with in the self-study material provided for the ICND2 course (please refer to the information discussed in the previous section about ICND2 for more information). The only difference between the self-paced study material and this training program is that the lab exercises are included with the training programs for all the modules discussed here.

Enrollment

If you want to enroll for either ICND1, ICND2 or both the courses, there are different options and they are as follows.

Visit the Cisco learning locator page for enrolling yourself into an instructor-led training program. Visit the Cisco Private Group Training page to enroll yourself for a private group training. If you want to opt for the self-paced e-learning program then you must visit the Cisco Learning Network Store and to access the

digital library, please visit Cisco Platinum Learning Library.

Interconnecting Cisco Networking Devices: Accelerated (CCNAX)

This course is the perfect amalgamation of the two training courses- ICND1 and ICND2. This is a 5-day training course. In this course, you will learn about the installation, management, operation, configuration and the fundamentals of the Internet Protocol version 4 or IPv4 along with the Internet Protocol version 6 or IPv6 network. Apart from all these topics, this 5-day training course will provide you information about the configuration of a LAN switch, an IP router, the ways to connect to a WAN network and the skills necessary to identify potential security breaches. This combined course will teach you about the basic troubleshooting tips and steps that are used in networks of an enterprise while preparing you for the CCNA Certification.

The different elements included in this training program are Quality of Service (QoS) as well as their applications, the effect of virtual and cloud services on enterprise networks and their interaction and a detailed overview of the network programmability along with the corresponding tools and controller varieties that are available for supporting a Software Defined Networking (SDN) architecture. The list of things you will learn from this course doesn’t end. You will learn about the interactions and functions of the firewalls, wireless controller and their access point and the basics of network security and IPv6. As mentioned, this is the combination of the two courses- ICND1 and ICND2.

This course consists of instructor-led training that’s spread over five days and includes lab practice too. By the end of this course, you will be able to perform all the objectives proclaimed by this course. It is appropriate for network administrators, support engineers, associate network engineers and network specialists as well as analysts. You can either enroll for an instructor-led training course or a private group training course by visiting the pages available on Cisco’s official website- “Cisco Learning Locator” and “Cisco Private Group Training” respectively.

Cisco Official Course Material for Purchase

For $750, you can get access to the study material required for the CCNA exam. The topics are divided into subgroups that allow you to choose the ones that are for sale and the ones that are available for a free download. Ensure to check the course content and crosscheck them with the available material that you already have, so you do not make any repeat purchases. You can find the link to the catalog here[11].

Chapter Nine: Exam Tips

Now that you know what concepts are covered in the CCNA Routing and Switching Exam let us take a look at some tips that will help you pass your certification exam. Preparing for an exam is not just about memorizing as much as you can till the last minute. You can ace any exam with high scores if you plan and prepare. The tips here have helped many others do well on these exams, and we are sure they will be beneficial for you as well.

Get to Know Your Exam

It is important to know the challenge that you will face if you want to succeed. Sitting for the exam without adequate research on it will be a disadvantage for you. There are a lot of people who have given this exam, and you can benefit from their experience too. There is tons of information about the exam available on the Cisco website, and this book provides some more information about the exam. The website and book also provide useful links that will provide information on some exam topics, practice tests, study material and online tutors. This book provides an overview of the exam, including the prerequisites and the different types of questions you will face. This book also provides detailed information about the topics that you will need to know and the percentage of questions that are dedicated to each of those topics. This will help you a lot when you want to build your study plan.

Organize a Study Space

Create a space meant just for studying. If you want to focus while you learn, you need to be away from any distractions. Avoid lying on the bed or the sofa while you read. It will make you feel lethargic and sleepy most of the time. Instead, find a study table with ample space for you to spread any notes and books around. Find a chair that is comfortable and will prevent any backaches. Also, keep your phone or laptop away unless you need to study from it. Getting rid of distractions will help you concentrate and learn better. The way people study differs sometimes. You might be someone who benefits from complete silence so study in an enclosed room where no one will disturb you. You might also be able to study better with some low instrumental music playing. If a cluttered room works for you, then so be it. If you thrive in a neat environment, try to keep your study space well-organized. Find out what works best for you and organize your study area accordingly.

Get Practical and Theoretical Experience

To pass the CCNA exam, you need practical experience, not only theoretical knowledge. Prepare for the exam in a way that you can use the theoretical concepts for troubleshooting or networking issues in the real world. When you know there is a problem, you should also know how to find alternative solutions. For instance, when IP is found to be unreliable, you have to determine some alternative troubleshooting for communication between the nodes.

Obtain the Right Material

Once you know what topics you need to study for the exam, it is time to get the right study material. The latest editions of the book are the best materials to use to prepare for the exam. These books are CCNA Routing and Switching ICND2 and CCENT/CCNA ICND1. You should also use the series called “31 Days Before.” This series is available on Cisco Press. You should try to cover all the questions in this material and ensure that you can calculate in your sleep. This knowledge will help you pass your exam. Make sure you have all your notes in order and check for any handouts that your preparation center might have given. Also, take time to read over the outline of the course or the guide. You can summarize every section you learn in your own words for future reference. Getting everything together will make it easy to find the relevant material while you are studying.

Create Your Own Custom Study Plan

If you do not plan for your exam well, your chance of clearing the exam will drop. It is important to develop a study plan that will fit your schedule. You do not have to write an elaborate plan since a simple to-do list will also work. When you are developing your study plan, you should consider the following:

- When do you want to take the exam? You should first create your profile on the exam page, and see what location and time suits you best.
- How much time can you devote to preparing for the exam on a regular day? If you have other commitments or are working, you should ensure that you have sufficient time to cover all the topics. You should also give yourself enough time to write practice exams under exam conditions.
- Can you afford the training courses and the preparation material? You should always look for certified training and study material. This will help you develop a clear understanding of every topic that is covered in the

certification. One of the best ways to ensure that you pass the exam is to purchase the pre-study material and begin reading it. This will help you create a solid foundation and also help you develop the necessary skills based on the course you have chosen.

- What training method helps you learn best? Some people love classroom sessions while there are others who prefer self-learning. Some candidates prefer online training material since they can study at any time. You should always use your experiences to help you identify the method best suited for you.
- Do you know the subject you have chosen well? It is difficult for experienced professionals who have good knowledge of the subject to clear the examination. You can use your experiences to help you understand how to tackle the examination. That being said, you should also take the questions, logic, and the length of the exam into account. When you rely only on your experiences, it can lead to bad results.

Get Involved in an Exam Prep Course

It is true that self-study is a bold decision to make, but it is not always the best way to study for an exam. You must understand that you need to have in-depth knowledge of the subject that you are studying if you wish to clear the exam. This is the case for entry-level certifications as well. It is important to remember that the definitions you learn for one certification may be different for another certification. This is because different bodies developed the study material for the exam. This means that even if you do have firsthand knowledge about the subject, some parts of the subject and sometimes the entire subject, will not necessarily be applied in the field. This is because a task professional will use other concepts to complete the work. When you are preparing for a certification, you can spend time with an experienced professional who knows how you can beat the exam. It is always a good idea to sit with the professional and ask him or her any questions that you may have. You can also share strategies and experiences. This will improve your chances of clearing the exam.

Understand TCP/IP Stack Addressing & Data Flow

When it comes to clearing the CCNA Certification, you will need to understand how the TCP/IP modern protocol stack works. You should understand how this stack is used to address different networks.

Link Layer

The data access layer focuses on Ethernet addressing. Therefore, you will need to understand the following about MAC or Media Access Control Addresses:

- A MAC address has 12 hexadecimal digits. It is a 48-bit address.
- If there are two nodes or hosts on a network, they can communicate with each other using a MAC address. You should understand how the addressing works, and also understand how the host system maintains the ARP table or cache.
- You should also understand the MAC address table and the CAM or Computer Addressable Memory table. You should also understand how the switch uses these tables to filter or forward traffic.

Internet Layer

Every certification exam will have a few questions about how the Internet Protocol or IP addressing works. These questions may include the following:

- It is important to understand what the subnet mask in IPv4 addressing does, and also know what the reserved address is.
- It is important to know and understand the different address types in IPv6 addressing like unique local, link local and global.
- It is always a good idea to learn more about subnetting.

Transport Layer

You should learn some common port numbers for services like Http (8), Telnet (23), Https (443) and others.

Have a Basic Understanding of the Cisco Command Line Interface (CLI)

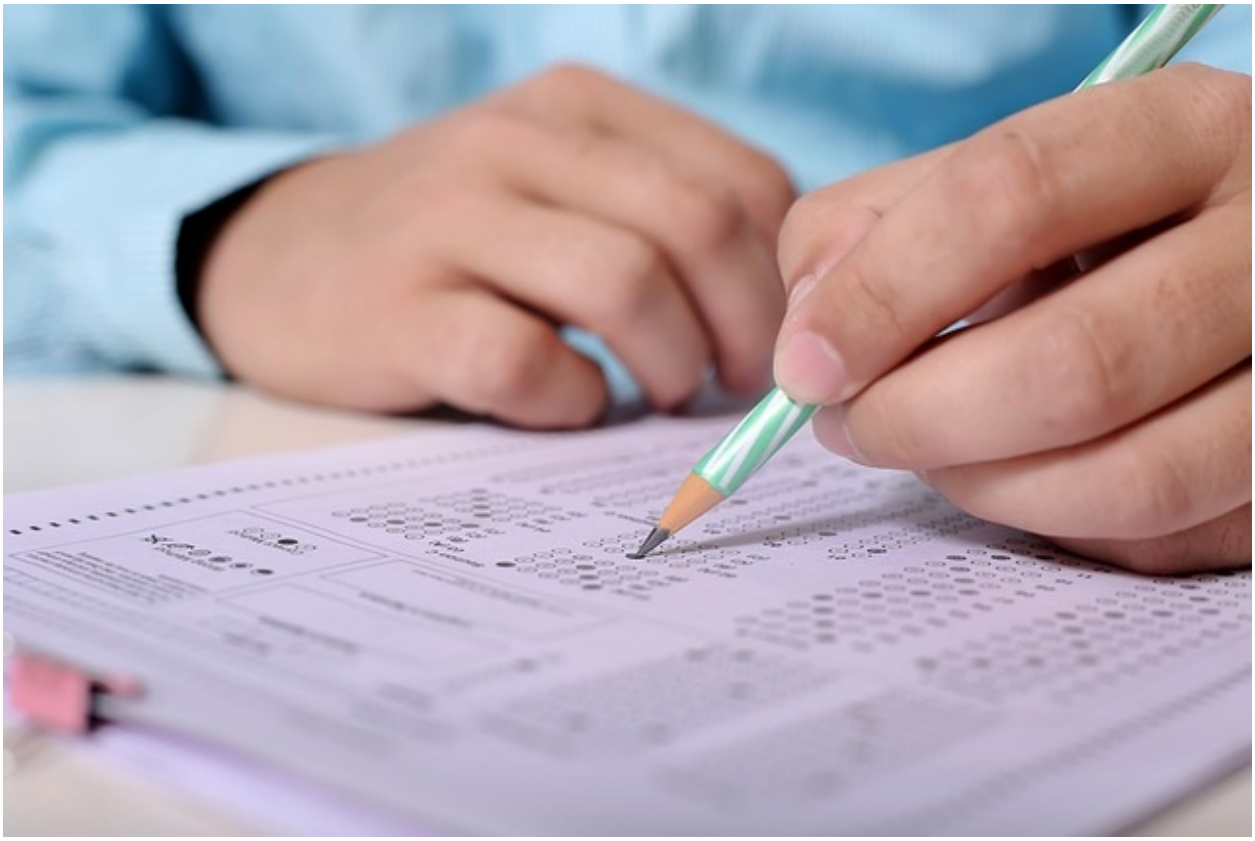
Every Cisco Certification exam will include some lab work, and it is important that you, as a Cisco technician, have a basic understanding of the configuration and some investigative commands. Of all the commands, it is key for you to learn the commands that help you do the following:

- Examine the settings of the interface
- Verify the configuration
- View the different address tables (specifically MAC)
- Check all the routing protocols

These topics will be covered in detail in your study material, but it is always good to have some knowledge about these concepts before you sign up for the examination.

Take Practice Exams

A very effective way to prepare is taking practice exams. If there are practice exams available, you should take them and test yourself. This will not only help you assess your knowledge of the subject but will also make you familiar with how the questions are structured. It will help you in getting familiar with the format of how the questions are given. It is also recommended to time yourself while practicing so that you know how much time you take while solving each section of the paper. You will get a good idea of where you need to practice more and what requires more time. This way you can choose to deal with each section of the paper during the main exam accordingly. It is always a good idea to use official question databases and training material since that will help you emulate the real test. You should remember that you do not need to memorize every question. It may be easy to do this since there is an official question bank that is available for each certification. However, you should aim to use the practice tests as a way to identify your strengths and weaknesses.



If you notice that you do well in one area, but poorly in another area in consecutive tests, you should focus on the latter area. It is always good to use an official question database since it will not only tell you what the correct response is, but will also tell you why the other options are incorrect. This is a good way to deepen your understanding of the subject. You can also use practice exams to help you emulate the real exam. You can choose to take a set of questions when you have the time, but that does not necessarily help you since you do not solve those questions under exam conditions.

When you complete a full practice exam, you can test your attention levels, concentration, skills and resilience. That being said, you should never be discouraged when you view your practice exam results. Things will certainly go downhill when you take a practice test for the first time. This is especially true if you have not finished the course. You should take some time to study the material and ensure that you use all the available resources to improve your understanding. When you do this, you will see consistent results in your practice tests. Make sure you schedule all your practice tests long before the day you have to take the exam. You need to set the deadlines for yourself. Keep checking and track what you have learned in that period. It will allow you to take notice of any area that requires improvement.

When you take the CCNA Certification Examination, you should look at both the theoretical and practical knowledge. When you prepare for the examination, you should try your best to use all the theoretical knowledge in troubleshooting and networking issues. For example, you must know that most IP addresses are insecure. This means that you will need to identify another way to troubleshoot that vulnerability to ensure that the information passes through every node in the network. You should keep this aspect in mind when you prepare for the exam.

It is important that you understand that any CCNA Certification requires that you have some practical experience. You cannot expect to pass the exam if anyone could just grab a book and read every word that is in that book to pass. This exam is not easy, but you can improve your chances of clearing the examination if you practice some networking fundamentals. The exam does cover a lot of technology including ISP, router/switch, PC, hub and RJ-45 cords. You should start by gaining experience first in these areas before you move onto DNS, WPS and WAN. Once you understand these concepts well and know how to work with them, you can begin to build a network configuration. Once you build that network, you can see how you can troubleshoot any issues that crop up.

Another exercise that you can perform is to build network topography. All you need to do is set up a network, tear it down and build it again. Once you do this a few times, your knowledge of the foundations of networking will improve. It is important to build a lab if you want to clear the CCNA examination, and we will cover this in the next points.

Join the Online Community

When it comes to IT certification exams, there is a lot of material available on the Internet. There are many communities where people can share their experiences. Some people will be willing to share some exam strategies that you can use. You can use these forums to learn more from a person's successes and failures. Aside from the Cisco Learning Network, you can search Google for a forum for that specific certification. You can also view the CCNA page on Reddit since there are people from across the globe that share their experiences. You should stay away from some toxic posts and people if you do not have sufficient time to help people. Many users vent their frustration on an online forum, and this can discourage you.

Study Until it Feels Like Second Nature

If you find it difficult to repeat different networking terms with accuracy, the chances of you passing your exam will decrease. The prospects will decrease further if you want to take the accelerated examination. You must remember that a CCNA examination is comprehensive, and there are some tidbits that people often overlook when studying for the exam. It is important that you learn every term that is covered in the book, and it is a lot of work to do that. You should memorize internet speed designations, port numbers, and understand different networking tools and more. You must study every day and ensure that you commit every term that you come across to memory. Ensure that you remember the name of every item that you cover in the syllabus. You may be wondering why you need to commit everything to memory when not everything is asked in the examination. It is true that you will not be asked about every minute piece of information in the examination. That being said, you must remember that you will encounter something at work someday. A CCNA Certification is valuable since it will say a lot about your quality. You will also learn to stop mixing words and calling a router a switch.

Revise

Before your scheduled exam, take time to read through the Cisco Press books and the information in this book. It will help in refreshing your memory. You will also be able to identify any portion that you may have accidentally skipped over when you first read it. This last period before taking the exam should be devoted to revising and solving more questions. You can use the various internet forums to find any new questions that might come up on the exam. At this point, you should have ample grasp over networking concepts that are required for the CCNA certification.

Experts suggest that you should read the Cisco Press Books over and over again. This will help you ensure that everything that you have studied is fresh in your memory. You should do this before you give the actual examination. You should also identify the different concepts that are covered in the material and see if there is anything that you have missed out on. You should always dedicate the last few weeks before the exam to solving different questions and identify new questions via the mock examinations or internet forums. It is essential to revise since you will re-learn the essential concepts that will create the foundation for the CCNA examination.

Use Practice Drills And Flashcards

You may be wondering why this method has been suggested, but many test takers say that these methods have helped them clear the examination. When you write a mock exam, make a note of the questions that you struggled to answer on a flashcard, and write the answer on the back of the card. When you do this, you will have a useful stack of cards that you can use for your review. You should try to review these cards at least twice a day. It may bore you, and there is a possibility that it may feel like overkill, but this habit will ensure that these answers become like second nature to you. If there are some answers where you will need to perform the process, you should take some time and practice those processes until you can complete the process with no external help. This will not only drill the concepts into your brain but will also prepare you for your career. There will be times when your senior at work will ask you a question and it is crucial that you answer that question immediately. If you identify such questions when you are preparing for the exam, make a note of it on the flashcard.

Never Rush to Take the Exam

Remember that it will take more than a month to study for a CCNA examination. These tests include problems that will seem like second nature to you. That being said, if you have bad tech habits or do not know some terms, you will lose points in the examination. You should always spread the exams out if you are very nervous. This will give you sufficient time to brush up some of the concepts and also gauge if you have what it takes to clear the examination. It is okay if you want to take a less intensive route since that will help you save money. Remember that these tests have been designed to be unanswerable and tough if you have not spent sufficient time trying to understand the concepts covered in the syllabus.

Give Yourself a Breather

It is okay to kick back and relax on the last few days before the exam. You can revise, but it is essential to take it easy. All you need to ensure is that you remain calm. A lot of people tend to be nervous and try to cram as much as possible on the days before the exam. They even skip meals and proper sleep to study more. This kind of last minute studying will be futile and have a negative impact on your ability to perform well on the scheduled exam date. Give yourself a breather for a few days and rest well before the exam.

Have an Exam Day Preparation Plan

The big day has finally arrived, and you may be anxious; this is very common. You should only focus on doing your best in the exam and not exhausting yourself. Here are a few things you should remember.

Is your exam kit ready?

You should look at the examination website, and ensure that you have all the items that you need for the exam. There are times when candidates are asked to leave the exam because they did not have one or more of the necessary items. You should read the candidate or exam guide and make a list of everything necessary. You can also speak to the person responsible at the test center to learn more about the requirements.

Are you calm and well rested?

This tip is as important, or maybe more important, than creating your study plan. Some candidates, because of physical and mental exhaustion, fail their exam. They may stay up late and study or go through the concepts repeatedly. What they forget is that it is not a good idea to read at the last minute since it can leave you anxious. If you want to do a final review, you should read only a few concepts. Do not focus on every concept that you think you are weak in. It is okay if there are some concepts that you do not fully understand. Do not focus on those topics a few hours before the exam. You should focus on those topics that you are good at. You can create a summary or a glossary that will cover the necessary and essential information, and focus on those during the last few hours. You should consume a light lunch before the exam to make sure that you are at your best.

Did you make the necessary arrangements to be on time at the test site?

Most certifications have a strict policy when it comes to time. If a candidate is

late, he or she may not be allowed to sit for the exam. If you use public transportation, you should try to leave for the exam center an hour before the exam. If you are taking your vehicle to the car, you should identify the correct route and know where to park your car.

Clear your mind

You now have a few hours to complete your paper. All you need to do is relax and take a deep breath. You should remember that you have put in enough effort and time to prepare for the exam. Being nervous and overthinking will be a disadvantage in this situation.

Be aware of time

When you are writing the exam, you will zone everything else out and focus only on the exam. This is a good thing to do because you can answer the questions correctly. That being said, you should ensure that you do not lose track of time. If you have noticed, the hours during an exam pass at a very fast rate. Therefore, you should ensure that you have sufficient time to cover all the questions and fill the answer forms correctly if required.

Take your time reading the questions

Even when you have limited time, you should ensure that you do not rush. If you do, you are at risk of misreading and even missing out on a question. Take some time and pay attention to every question and the answers that follow that question. You must ensure that you understand what is being asked. That way you can ensure that you give the right answer. You should look for options that have been included in the list to distract you. You should also pay attention to terms like not, never, all, least, always and most. These words can change the meaning of the sentence. It is also important to remember that the questions that say, “Choose the best answer,” will often have more than one correct answer. You should understand the answers and choose the answer you think is most suitable for the given question. It is for this reason that you should go through the official question database before an exam.

Try to relax

You can always stretch your muscles during the exam. When your mind is relaxed, you can work on the hard question that you have still not solved. Remember, there is no reason to panic. Always remain calm to improve your concentration. The exam you are taking is difficult, so you need to ensure that you are having some fun while taking the exam. You must believe in yourself. If you stuck to your study plan, your results will undoubtedly be great. Otherwise, you will have enough experience for the next try.

Keep learning

This is the anticlimactic part of your learning cycle. The examination is now over, and if you pass, you will receive an electronic Certificate of Completion via email within five business days. You should also understand that it is all right if you were not successful on your first try. You know what mistakes you made, and know how to improve, so you can reach a higher level next time. This by itself is an accomplishment. You should motivate yourself to try better and improve your chances of success. If you want to help your peers, you can share your experiences and prevent them from making the same mistakes that you did.

Remember, the CCNA exam is comprehensive. There will be questions on many varieties of topics. These will be based on studies related to TCP/IP to very comprehensive routing protocols that span trees. It may seem hard to pass the exam when you think of how much there is to study. It is recommended that you focus on ICDN1. It is usually the base for different Cisco CCNA exams. As a candidate, you will have to go through the entire breadth and length of all the topics. The exam is also very quick. It will include about 50 to 60 questions that have to be completed within 90 minutes. This short amount of time given for writing the exam can be stressful for even the most prepared person. You will, however, be able to fare well if you remember all the training you underwent and depend on your experience. The questions will mostly deal with real-world troubleshooting.

Keep yourself motivated to study and prepare for this exam well. Once you are CCNA Certified, the doors to networking success are wide open for you.

Strategic Tips

The CCNA Routing and Switching Certification is awarded to those individuals who show some skills in designing, implementing and troubleshooting different networks that are based on the TCP/IP model. As mentioned earlier, you must ensure that you test your technical skills while you prepare for the examination. If you have a CCNA Certification, you may be promoted in your existing job or get a new one. Apart from the tips mentioned earlier, let us look at some strategic tips that you should keep in mind if you wish to pass the exam without having to worry about the exam dumps.

1. Spend some time to go through the blueprint of the CCNA exam. This has been published by Cisco and can be found here.
2. You should avoid using only one source when you are preparing for the examination. You should try to use a combination of books, online training, labs and videos.
3. You should always be honest with yourself about any concept. Ensure that you understand the concept fully before you begin working on a practical assignment.
4. You should try to memorize some commands that will help you with troubleshooting. You should write these down in either the first or last page of your book.
5. You should memorize the TCP/UDP services and port numbers. This will not only help you during the CCNA examination, but will also help you during your job.
6. You should never stick to one workbook, and always look at multiple scenarios. As mentioned earlier, it is important that you build your network topologies.
7. Look for different questions on the internet. You can look at different communities and forums to gather these questions.
8. Always try to take the two-way examination. The single 200-125 CCNA examination will cost $295 while taking the 100-105 ICND1 and 200-105

ICND2 examinations will cost an additional $5 - so the total cost will come to $300.

9. As mentioned earlier, it is important that you review all the concepts since people often retain only ten percent of what they have read.
10. You should take every practice examination under examination conditions, and always focus on the questions that make you uncomfortable.

Chapter Ten: Exam Study Plan

It is great that you have decided to prepare for the CCNA Routing and Switching Exam. This book will help you understand what the exam is all about, but you may not have stopped to analyze where you are. You may not have prepared a study plan that will help you cover the numerous topics in the course. It is for this reason that you should develop a study plan for yourself. This chapter gives you a detailed four-week plan. If you stick to the plan in this chapter, you can pass the exam. It is essential that you stick to the rules of the plan if you want to succeed.

If you want to follow this study plan, you should ensure that you make changes to your daily schedule. According to this plan, you are required to complete at least two sections every week and master those sections. This means that you can spend three and a half days on a section that you want to cover. Only when you do this can you complete your preparation in four weeks. It is also important to identify the topics that may take too much time because you should give yourself some extra time to cover those topics. You will also need to set some time aside at the end of the fourth week for some extra practice.

When you decide to prepare for the exam, you should go to the Global Knowledge page on the Cisco website and take some of their brief pieces of training. The instructors are brilliant. Since the instructors are taking the same exams that they are instructing for, they know exactly what they need to do to help you clear the examination. It is always a good idea to learn and understand the concepts instead of only learning for the sake of clearing the examination.

Week 1[12]

Each candidate has issues with different topics in this certification however most people seem to have trouble with subnetting and binary. While you are going through the material, you should go through all the active sessions. During the first week, you should cover the following topics:

- Introduction to networking and the building blocks of the same, different types of networking, OSI reference and TCP/IP model
- Cabling and various types of Ethernet technologies, Cisco Layer 3 Model and the summary of the chapter
- Subnetting along with IP addressing, classes, types and composition of the IP addressing, public and private IP addresses
- Subnetting basics and variable subnet length masks, summarization of routes and troubleshooting the IP address

You must take all the time you need when it comes to perusing through all the available material. You can spend two hours or longer when it comes to finishing this task. Since some of the subjects listed in the points above are short, there isn’t too much material that is made available to you. On such days, you can begin the next subject or chapter. You should not go back and review the previous chapters that you have covered at the moment. Once you have covered all the topics mentioned above, you should portray the capacities of every system gadget. You can also watch different videos on each of those topics and read different books that easily explain these topics. If you have time, you can also complete some practice tests on those topics.

Week 2[13]

To write the Routing and Switching Certification, it is crucial that you complete the 640 – 840 exam. This exam has eight sections that are listed in the blueprint, and there are a total of 76 subtopics in this exam. In this week, you should cover the following topics:

- Introduction to switches, IOS and Cisco routers, use of CLI, i.e. command line interface, the basic configuration of switches and router
- Gather the information and verify the configuration, configure the router interfaces along with DHCP and DNS and take the CCNA Lab 1 at this point
- Restoring, backing up, erasing and saving the IOS and configuration file, use of password recovery through a Cisco router, Cisco discovery and protocol and use of Telnet via IOS
- Basics of IP routing, understanding the operations of the same, default, dynamic and static routing, routing metrics and administrative details and classifying routing protocols
- Routing loops and redistribution, default route and static lab, routing protocols of RIPv2 and RIPv1, configuring, troubleshooting and verifying the RIP
- Basics to enhanced gateway interior protocol routing and configuring the EIGRP, troubleshoot and verify the same, operations and configuration of OSPF
- Redistribution and summary routes for OSP and EIGRP. You should also take the labs for EGRP, OSP and RIP at this stage

Week 3

You should now take a look at the protocols. The topics that you will need to cover during this week include the switching protocol and spanning tree, understanding the configuration and functioning for catalyst switch, STP, RSTP and Ether channels with Cisco additions, Rapid spanning and VLAN spanning, BPDU guard and filter, labs for Port and STP security, MAC addressing table, VLAN and VTP, types of VLANs and Ports, VLAN trunking and protocol, Cisco firewalls and Network security, VLAN configuration and routing, device management, secure communication and security for Layer 2.

Week 4

This is the final week, and it is important that you push yourself if you want to achieve your end goal. Therefore, you should cover every topic as much as you can, understand the content and take some practice tests. This means that you should pull out all the stops. The topics that you will need to cover during this week are access list and secure communication, switch port and remote access, standard and extended access list, network translation address, dynamic and static configuration of NAT, WAN and NAT troubleshooting, VPN and frame relay, IP services and IOS Netflow, NAT and WAN troubleshooting, PPP concepts and configuration, IPv6 and encryption.

It is recommended that you go through the Cisco Press books since that will help you remember all the concepts. You can also identify some topics that you may not have covered during the first few weeks. You should also try to solve some test papers this week. It is always a good idea to look for some new questions on any forum.

You are now ready to take your exam! Remember to stay calm and focus only on the questions on your screen and nothing else.

Important Concepts to Learn

It is hard to clear the CCNA examination since you must have a deep understanding of the different concepts and the fundamentals of networking. When you prepare for the CCNA examination, you will need to familiarize yourself with varying concepts of networking and numerous technologies. If you want to obtain the Routing and Switching Certification, you will need to understand the concepts that are covered in both ICND1 and ICND2. That being said, there are some concepts that you must fully understand since they are the most important. This is because the examination will certainly ask questions based on these concepts.

TCP/IP and OSI Model

When you prepare for the CCNA Routing and Switching Examination, you must understand this topic fully since it one of the most important topics covered in the examination. The TCP/IP or Transmission Control Protocol or Internet Protocol is used by interconnecting network devices to communicate with each other. This is one of the most important concepts to understand since it is the foundation of any networking course.

The OSI or Open Systems Interconnection model is used to define the framework of any network. You can implement the different protocols in every layer of the network. It is important for you to understand the seven layers in the network. The seven layers in the OSI model are – data link layer, physical layer, presentation layer, transport layer, network layer, session layer, and application layer.

Subnetting

As mentioned earlier, it is important to deeply understand the concept of subnetting for the examination. Subnetting will help you understand how you can create two or more networks from one large network. There are two benefits to doing this:

- You can resolve any issues within the split network without affecting the whole network.
- It becomes easier to manage the network since you will only need to take care of smaller networks.

Before you give your examination, you must ensure that you know what subnetting is and also understand how it works.

IPv6

The latest version of the Internet Protocol is the IPv6,and it is a separate topic that you will need to study to clear the examination. The IPv6 is a communication protocol that gives every computer on a network its identification and location. This identification allows network administrators to manage the traffic in a network. This protocol is slightly more complex and comprehensive when compared to the Internet Protocol.

Wireless Access

You must cover all the information there is about wireless access since this technology has gained immense importance over the past few decades. It is essential that you cover this topic for your examination. Cisco offers numerous networking requirements and wireless routers, and most companies are doing their best to switch to wireless technology. Therefore, it is essential that you understand wireless access for the examination.

Network Access Translation

Network Access Translation or NAT is used when there is any information passing via a network. It will modify the information of the IP address to match the IPv4 header when it is moving in the network. The basic NAT or one-to-one NAT, as the name suggests, is the simplest NAT when compared to all the other types. This is used to interconnect two IP networks whose addresses are incompatible. This type of NAT is used by network employees and users since it supports remote accessing.

Chapter Eleven: Frequently Asked Questions and Myths

FAQ

What changes have been made to the associate-level certification programs offered by Cisco?

Cisco announced on March 26, 2013 that it was going to redesign or re-structure the associate-level certification programs, including the CCNA and Cisco CCENT certifications. The courses have been restructured to ensure that the study material is aligned with the changing roles in the routing and switching industry. These courses also now include information on advanced technologies like voice, security and wireless. This certification was formerly called the CCNA Certification, and it has not evolved to concentrate only on routing and switching and has therefore been renamed as the CCNA Routing and Switching Certification.

In addition to this, the CCENT Certification has replaced the CCNA Certification as a prerequisite for any associate-level certification in advanced technology, including the CCNA Voice, CCNA SP Operations, CCNA Security, and CCNA Wireless. If you want to learn more about the associate-level certification program, you should go to the Cisco Learning Network for more information about the changes made to the certification.

Are there changes being made to the CCNA Routing and Switching Exam?

There are new exams like the CCNA Composite, ICND1 and ICND2 that have been introduced by Cisco. The topics that are included in the certification are IPv6, troubleshooting and the latest Cisco routing and switching software and technology. As mentioned earlier, the subjects covered in these exams are being

updated to reflect the evolution of the roles in the industry. The exams 640-816 ICND2, 640-822 and 640-802 are being replaced by the 200-101 ICND2, 100-101 ICND1 and 200-120 CCNA respectively.

Why have so many new topics been included to the CCNA and CCENT Routing and Switching exams?

Many global Cisco customers have confirmed that they want all their employees who are CCNA-qualified to have a higher level of skills and knowledge. Cisco has therefore moved some topics from the ICND2 certification to the ICND1 certification examination. A student who passes the ICND1 examination now will certainly have more skills and knowledge when compared to the time before the subjects covered in the ICND1 exam were updated. This will help you learn more about all the topics covered in the examination before you progress towards the ICND2 certification examination. It is true that this change in the syllabus is difficult for most students, but it is best to take these exams if you want to be better prepared for an interview in today's market.

If I want to obtain the CCNA Routing and Switching Certification, what are the necessary requirements that I need to adhere to?

If you want to obtain the CCNA Routing and Switching Certification, you must clear the following exams:

- 200-125 CCNAX Composite Exam

OR

- 100-105 ICND1
- 200-105 ICND2

Is there a formal training course that I will need to attend to obtain the certification?

You do not need to attend any formal training course to obtain the certificate. That being said, it is recommended that you take up some instructor-led training sessions when you are preparing for the exam. These sessions will help you gain

a deeper understanding of the subject.

Where should I register to take up an instructor-led training course?

It is important to remember that only authorized Cisco Learning Partners can provide instructor-led sessions. This training will be delivered by those individuals who have been certified by Cisco. You should visit the Learning Partner Locator on the Cisco website to find the centers that are closest to you.

Are there any prerequisites that I will need to meet to obtain the CCNA Routing and Switching Certification?

You can take up the exam at any point in time since there are no prerequisites. That being said, it is always good to have some experience in the networking field.

What job roles can I apply for once I obtain the CCNA Routing and Switching Certification?

You will be prepared for the following roles once you obtain the certification:

- Network Support Engineer
- Network Specialist
- Network Administrator
- Network Engineer Associate
- Network Analyst

How soon must I recertify my certification?

You must remember that the CCNA Routing and Switching exam is only valid for three years, and you must recertify after that period. To learn more about the recertification process, please read the recertification policy for this program.

Are there any self-study material that I can use to prepare for the

certification?

There is a lot of self-study material that Cisco offers. Some of the options are:

- Cisco Certification Practice Exams
- E-learning courses
- Cisco Press
- Cisco Learning Labs

Myths About CCNA

One of the issues with the internet is that it allows people to develop myths and lets rumors spread quickly. The truth is that the story is always exaggerated as it moves from one person to the next. The CCNA exams are not an exception to this. There are some myths about the CCNP and CCNA exams that have been covered in this section.

The questions you are asked in the exam are based on the survey that you fill out at the start of the exam.

Cisco gives every candidate a survey at the start of the exam where they are asked some questions about how comfortable they are with certain technologies and how they prepared. It is difficult to rate yourself on ISDN, Frame Relay and other technologies since you are about to take an examination that covers those topics. Therefore, it is possible that you may worry about how the questions will impact your examination. The truth is that they do not matter. There are some posts on the internet that say that when you rate yourself “excellent” on any topic, the questions on that topic will be harder, while a lower rating will lead to easier questions in the examination. This myth has been debunked by Cisco, and it is important that you get it out of your mind. You should not worry too much when you are filling out the survey.

When you answer a question incorrectly, the exam will ask you questions from that topic until you get one answer right.

Cisco does not use adaptive testing in any of its exams. The questions that you see in your examination come from a large pool of questions. If you have ever given the GMAT exam or the Novell exams, you will certainly recognize this type of testing. This means that the CCNA exams are not nerve wrecking.

Your answer will be marked wrong for the simulator questions if you include an extra command.

The simulator engine used in the CCNA and CCNP exams only acts like a switch or a router. Therefore, it is okay for you to use an extra command. You will be told during the exam if the engine does not accept the command. You should relax and configure the engine in the same way that you would configure a switch or a router.

You are ready to pass your exam when you walk into the room with a combination of configuration troubleshooting skills, hands-on experience and theoretical knowledge. You should never let some internet gossip distract you.

Things to Keep in Mind

CCNA is a comprehensive exam.

Every CCNA exam will include questions on numerous topics that are based on the TCP/IP topics or subjects. You will also see questions on the different routing protocols that you can use to span trees. Since there is a lot to study, CCNA is known to be a difficult exam. Experts and instructors suggest that a candidate should focus on the ICND subjects since these give you the foundation for any CCNA examination. This means that you will need to understand everything in the material for those exams.

The CCNA exam is very quick.

There are close to sixty questions in the CCNA exam and you are given ninety minutes to complete the exam. It is difficult to answer so many questions in the given time even if you are well prepared. All you should focus on is your experience and your training. It is important to remember that many of the questions focus on real-world issues.

The Cisco Certified Network Professional and CCNA Routing and Switching is right for people who are interested in networking, they can take this examination if they have a minimum of 1 year experience in the networking business. You can work independently after CCNP and CCNA Certified examinations.

Cisco Certified Network Professional will validate that the candidate after passing this exam will be confident in planning, verifying and troubleshoot wide network areas. The candidate can also collaborate with specialist in the industry who are advanced in video, voice and wireless solutions. Achieving this certificate indicates mastery over skills that are required in enterprising roles such as network technician, support engineer, network engineer and support engineer.

The knowledge and skills on routing and switching protocol that you will gain while pursuing the Cisco Certification are an everlasting foundation for someone who has just started their career in this field or someone with years of

experience. They play an important role for the network functions for the future as well as the present network.

The skills required for the role of a network engineer evolve significantly as an enterprise network gets increased amounts of demands. The field is competitive and requires IT professionals to be skilled and up-to-date with networking skills and technological advancement.

The Cisco Networking Fundamentals [14]

The CCNA Routing and Switching Certifications teaches individuals who are looking to validate Cisco networking fundamentals. It mainly focuses on foundational IP networking skills, which is required to operate and troubleshoot network layers. CCNA teaches learners how to configure LAN switch, operate, install and verify basic IPv4 and IPv6 network, configure IP router, identify basic threats, troubleshoot common network issues, understand topologies, configure EIGRP, connect to a WAN, configure OSPF in IPv4 and IPv6, understand network issues and wide area of the technologies, understand device management and Cisco licensing. As a professional in networking you will gain knowledge on industry-supported talents and skills that you can showcase in your career later on. You will gain a lot of career opportunities because this examination is to certify that you have the needed skills to do an effective job in your line of work. It is a very prestigious certificate for you to cultivate the necessary skills needed in the networking sector. Students can practice the following syllabus topics, these topics include all the areas covered under ICND1 (100-105) and ICND2 (200-105) Exams.

Exam Objectives

Here you will get an overview of all that the CCNA exam will cover.

Network fundamentals

It is the first module of the exam and will include fundamental topics like TCP/IP protocols, firewalls, etc. and others related to networks. Ipv4, Ipv6 address details are also included.

LAN Switching Technologies

In this module, different switching concepts of a network like configuring, STP protocols, interswitch connectivity, etc. are included.

Routing Technologies

This module will consist of various routing concepts and the routing table. It will have the types of routing like static and dynamic, routing protocols both interior and exterior, and some others like OSPFv2 for Ipv4.

WAN Technologies

It will include detailed studies of PPP and MLPPP configuration and verification on WAN interfaces. Also, PPPoE client side interfaces that use local authentication are included. Options for WAN connectivity and basic QoS concepts are also included.

Infrastructure Services

Topics in this module will include DNS loop operation, client connectivity issue troubleshooting, DHCP configuration and verification on routers, HSRP basics, etc.

Infrastructure Security

Topics of this module will include port security, mitigation techniques for common access layer threats, traffic filtering, etc. It also consists of configuration, verification as well as troubleshooting of device hardening.

Infrastructure Management

Management of devices constituting the network system is included in this module. Device monitoring protocols configuration and verification along with device performance are also a part of it.

Network Fundamentals[15]

- Compare and contrast OSI and TCP/IP models
- Compare and contrast TCP and UDP protocols
- Describe the impact of infrastructure components in an enterprise network
    - - Firewalls
    - - Access points
    - - Wireless controllers
- Describe the effects of cloud resources on enterprise network architecture
    - - Traffic path to internal and external cloud services
    - - Virtual services
    - - Basic virtual network infrastructure
- Traffic path to internal and external cloud services
- Virtual services
- Compare and contrast collapsed core and three tier architectures
- Configure and verify IPv6 address types
- Selection of the appropriate cabling type based on implementation requirements
- Compare and contrast Ipv4 address types
    - - Unicast
    - - Broadcast
    - - Multicast
- Comparison and contrast of network topologies
    - - Star
    - - Mesh

    - Hybrid
- Configuration verification and troubleshooting Ipv6 addressing
- Compare and contrast of Ipv6 address types
    - Global unicast
    - Unique local
    - Link local
    - Multicast
    - Modified EUI 64
    - Auto configuration
    - Any cast

Operation of IP Data Networks

- (SDN) Awareness of programmable network architectures.
- Recognize the purpose and function of various network devices such as Router, Switches Bridges and Hubs.
- Expanded VPN topics, DMVPN, site-to-site VPN, client VPN technologies.
- Increased focus on IPv6 routing protocols, configuration and knowledge
- Knowledge of QoS concepts.
- Select the component required to meet a given network specification.
- Understanding of cloud resources deployed in enterprise network architecture.
- Describe the purpose of the networks
- Identify common applications and their impact on the network.
- Predict data flow between two hosts across a network
- Identify appropriate media, ports, cables and connection to connect Cisco network device to other network device and host in a LAN

LAN Switching Technologies[16][17]

- Configure and verify initial switch configuration including remote access management
- Determine the technology and media access control method for Ethernet networks
- Verify network status and switch operation using basic utilities such as PING, TELNET and SSH
- Identify the basic switching concepts and operation of Cisco switches
- Identify enhanced switching technologies
- Configure and verify VLANs
- Configure and verify trunking on Cisco switches
- Configure and verify PVSTP operation
- Describe how VLANs create logically separate networks and the need for routing between them
- Troubleshoot interface and cable issues (collisions, errors, duplex, speed)
- Describe and verify switching concepts
- Configure and verify troubleshoot VLANs (normal/extended range) spanning multiple switches
- Describe the benefits of switch stacking and chassis aggregation

IP Addressing – Ipv4 and IPv6[18]

- Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/ WAN environment
- Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment
- Describe the operation and necessity of using private and public IP addresses for IPv4 addressing
- Describe the technological requirements for running IPv6 in conjunction with IPv4 such as dual stack
- Describe IPv6 addresses

IP Routing Technologies

- Describe the basic routing concepts
- Describe the boot process of Cisco IOS routers
- Differentiate methods of routing and routing protocols
- Configure and verify operation status of a device interface, both serial and Ethernet
- Configure and verify utilizing the CLI to set basic router configuration
- Configure and verify routing configuration for a static or default route given specific routing requirements
- Configure and verify OSPF (single area)
- Configure and verify EIGRP (single AS)
- Configure and verify interVLAN routing (Router on a stick)
- Configure SVI interfaces
- Manage Cisco IOS FILES
- Verify router configuration and network connectivity
- Interpret the components of a routing table
- Troubleshoot basic layer3 end to end connectivity issues

IP Services

- Configure and verify DHCP (IOS ROUTER)
- Configure and verify ACLs in a network environment
- Configure and verify NAT for given network requirements
- Configure and verify NTP as a client
- Configure and Verify Syslog
- Describe the types, features and applications of ACLs
- Describe SNMP v2 and v3
- Identify the basic operation of NAT
- Recognize high availability (FHRP)

Network Devices Security

- Configure and verify network device security feature
- Configure and verify ACLs to limit telnet and SSH access to the router
- Configure and verify Switch Port Security features
- Configure and verify ACLs to filter network traffic

WAN Technologies

- Identify different WAN technologies
- Configuration and verification of PPP and MLPPP using local authentication on WAN interfaces
- ·Describe WAN connectivity options
    - MPLS
    - Metro Ethernet
    - Broadband PPPoE
    - Internet VPN
- Configure and verify a basic WAN serial connection
- Implement and troubleshoot PPPoE
- Configure and verify frame relay on Cisco routers
- Configure and Verify PPP connection between Cisco routers
- Describe WAN topology options
- Describe the basic QoS concepts
    - Marking
    - Device trust
    - Prioritization
    - Shaping
    - Policing
    - Congestion Management

Infrastructure Services

- Description of DNS lookup operation
- Troubleshooting client connectivity issues involving DNS
- Configuration and verification of DHCP on router
    - Server
    - Relay
    - Client
    - TFTP, DNS, Gateway options
- Troubleshooting client and router based DHCP connection issues
- Configuration verification and troubleshooting basic HSRP
    - Priority
    - Preemption
    - Version
- Configuration verification and troubleshooting inside source NAT
    - Static
    - Pool
    - PAT
- Configuration and verification of NTP operating in client or server mode

Infrastructure Security

- Configuration, verification and troubleshooting port security
    - Static
    - Dynamic
    - Sticky
    - Max MAC addresses
    - Violation actions
    - Err-disable recovery
- Description of common access layer threat mitigation techniques
    - 802.1x
    - DHCP snooping
    - Non Default native VLAN
- Configuration, verification and troubleshooting of Ipv4 and Ipv6 access list for filtering traffic
    - Standard
    - Extended
    - Named
- Verification of ACLS using APIC-EM Path Trace Analysis Tool
- Configuration, verification and troubleshooting of basic device hardening
- Local authentication
- Secure password
- Access to device
    - Source address
    - Telnet/SSH

- Login banner
- Description of device security using AAA with TACAS+ and RADIUS

Infrastructure Management

- ·Configuration and verification of device monitoring protocols
  - SNMPv2
  - SNMPv3
  - Syslog
- Troubleshooting network connectivity issues using ICMP echo-based IP SLA
- Configuration and verification of initial device configuration
- Performing device maintenance
  - Cisco IOS upgrades and recovery (SCP, FTP, TFTP and MD5 verify)
  - Password recovery and configuration register
  - File system management
    - Using Cisco tools for troubleshooting and resolving problems
  - Ping and traceroute with extended option
  - Terminal monitor
  - Log events
  - Local SPAN
- Describing network programmability in enterprise network architecture
  - Function of a controller
  - Separation of control plane and data plane
  - Northbound and southbound APIs

Chapter Twelve: Cisco Recertification

The Cisco Certifications are quite valuable and by now you are aware of the different benefits they offer. However, there is a drawback to these certifications - they come with an expiry date. Yes, these certifications expire unlike conventional professional certifications. Are you wondering why these certifications expire? Technology is always evolving and dynamic. We live in a world of constant innovation and it is foolish to lull yourself into believing that technology will stay dormant. Even the team at Cisco firmly believe in it. Every year there is something new that pops up, and regardless of how you feel about it, you need to keep yourself updated with all the changes that take place. This is the reason why Cisco keeps adding and introducing new modules while removing any outdated modules. If you take a moment and think about it, it does make sense. This is the reason why most of the certifications expire between two to three years. To ensure that you stay certified in a specific module, you need to keep recertifying them.

All CCIE certifications and Specialist certifications expire after two years. The Entry, Associate and Professional-level certifications expire in three years. The Cisco Certified Architect has an expiry date of 5 years from the certification. When you apply for recertification, there will be certain charges that are payable. There are different ways in which you can obtain recertification and this section deals with them.

Certification Policy of Cisco

It isn’t that good an idea to add expired certifications to your resume, but you can certainly mention them as an achievement. Knowledge can never expire, but it certainly needs to be updated from time to time.

Entry-level certifications

To renew an entry-level certificate, you can either take the same exam again or even opt to appear for a higher-level certification. For instance, if you have a CCNA Routing and Switching Certification that is about to expire, then you have the option of either opt for the CCNA Security or any other CCNA level certification exam. If you aren’t interested in giving an associate-level examination, then you can opt for the professional level certification. You can clear any one of the CNNP-level exams and it will automatically be counted as the renewal of your CCNA certification. Another option that is available to you is to opt for CCIE level exams. You can directly opt for CCIE exams since most of them don’t have any prerequisites and by doing this, it will be an automatic renewal of your CCNA certification.

To sum it all up, the following options are available if you want to rectify or renew your CCNA certifications:

- Clear any of the present Associate-level exams except the ICNID exam
- Clear any of the present 642-xxxx professional-level or any of the 300-xxxx professional-level exams
- Clear any one of the existing 642-xxxx Cisco Specialist exams (this doesn’t include Sales Specialist or Meeting Place Specialist, Implementing Cisco Telepresence Installations, Cisco Leading Virtual Classroom Instruction exams or any of the other 650-online exams)
- Clear any of the existing CCIE written exams
- Clear any of the existing CCDE written or practical exams
- Clear the Cisco Certified Architect interview along with the Cisco

Certified Architect board review for the renewal of your lower certifications

You merely have to choose one of the above-mentioned options.

Professional-level certifications

As with entry-level certifications, even for professional-level certifications you have two options - either take the same exam again or choose to appear for a higher-level certification. If you have a CCNP Routing and Switching Certification that is bound to expire within a year, then you can either reappear for the same exam or you can opt for any of the higher-level CCIE certification exams. You also have the option of clearing any of the other professional-level certifications to renew your existing certification.

To ensure that your existing certification doesn't expire, you must pass any one of the following options given here.

- Clear any of the existing 642-xxxx professional-level or any of the 300-xxxx professional-level exams
- Clear any of the existing CCIE written exams
- Clear any of the existing CCDE written or practical exams
- Clear the Cisco Certified Architect interview along with the Cisco Certified Architect board review for the renewal of your lower certifications

Expert-level certifications

You might be surprised that the highest level of certifications also have an expiry date. As previously mentioned, technology keeps changing and hence the certifications related to the technology must be updated too. If you want to renew your expert-level certification, then you only have one option and that's to reappear for the CCIE level of certification exams.

To renew your expert-level certifications, you must clear any of the following exams.

- Clear any of the existing CCIE written or lab exams

- Clear any of the existing CCDE written or practical exams
- Clear the Cisco Certified Architect interview along with the Cisco Certified Architect board review for the renewal of your lower certifications

That’s everything you need to know about the recertification process of Cisco. Please remember to renew your certifications before they expire. Also, ensure that the remainder of time left on an existing certification will not be added to your certification upon clearing a higher-level exam. You can track the status of your certification on Cisco’s website.

Chapter Thirteen: Sample Interview Questions and Answers

What is Routing?

Routing is the process of identifying the path through which any information can be passed from the source to the destination. This process is performed using a network layer device called the router.

What Purpose Does the Data Link serve?

The Data Link Layer has two functions:

1. Framing
2. Verifying that the messages from the source reach the right device

Why is it Important to Use a Switch?

A switch receives signals, and uses the bits from that signal to create a frame. By doing this, it can read or access the address of the destination. It will then send the frame to the right port. This is one of the most efficient processes of data transmission, since the switch does not broadcast the information on every port in the network.

In What Situation Does Network Congestion Occur?

If there are multiple users trying to access the same bandwidth, it will lead to network congestion. This is an issue that is seen in large networks where there is no segmentation.

Define the Term 'Window' in Terms of Networking.

Every network only allows a set of segments to be shared between the source

and the destination. The destination will then need to send an acknowledgment back to the source. The number of segments is called a window.

Is a Network Divided into Smaller Sections Using a Bridge?

No, a bridge does not divide the network into smaller sections, but it filters a large network without reducing the size of that network.

Which LAN Switching Method Does the Cisco Catalyst 5000 Use?

The Store-and-forward switching method is used in the Cisco Catalyst 5000. In this method, the data frame is only forwarded once the switch stores the frame in the buffer and checks the CRC.

What is the Purpose of the LLC Sublayer?

The Logical Link Control or LLC sub layer is used by application developers for the following services:

1. Error correction

2. Uses start and stop codes to manage the flow control to the network layer

What is the Difference Between IGRP and RIP?

RIP determines the best route in which the data should pass in a network based on the number of hops. IGRP, on the other hand, looks at different factors like hop count, bandwidth, MTU and reliability to identify the best route to a network.

How Many Types of Memories are Used in a Cisco Router?

A Cisco router uses different memories:

- The startup configuration file is stored by NVRAM
- During execution, the configuration file is stored by DRAM
- The Flash memory is used to store the Cisco IOS

What is BootP?

There are times when a few diskless workstations are connected to a network. The BootP protocol, short for Boot Program, is used to boot those workstations. A diskless workstation can also use this protocol if it needs to determine the IP address of the server and its own IP address.

What Does the Application Layer do in Networking?

The application layer performs the following functions:

- If any applications span beyond the OSI reference model specification, the application layer is used to provide network services for those applications
- Supports the components that are directly associated with communication in an application
- Helps to synchronize any application on both the server and the client's side.

What is the Difference Between the User Mode and Privileged Mode?

The user mode is used to perform a regular task when the system uses a Cisco router. These regular tasks include connecting to remote devices, checking the status of the router and to view any system information. The privileged access mode will include more options when compared to the user mode. The privileged mode can be used for debugging, including tests and making changes to the router.

Define 100BaseFX.

100BaseFX is an Ethernet, which has a data speed of 100. The main transmission medium in this Ethernet is a fiber optic cable.

What is MTU?

MTU or Maximum Transmission Unit is the maximum size of the packet that

can be shared in the network without there being any need to break it down further.

How Does Cut-through LAN Switching[19] Work?[20]

In this type of switching, once a data frame is passed to a router, it is sent out immediately and forwarded to the next segment in the network. This is done once the destination address is read.

Define Latency.

There are times when there is a delay between when the data is sent from one network device to another network segment. This lapse or delay is called the latency.

What are the Number of Hops Used When the Network Uses RIP?

If a network receives anything more than fifteen hops, it will indicate that the network or router is unreachable or out of service. Therefore, the maximum count is fifteen hops.

Define a Frame Relay.

A frame relay is used to provide connection-oriented communication by designing, creating and maintaining a virtual circuit. It is a WAN protocol. This protocol only operates at the Physical and Data Link layers and has a high-performance rating.

If you Want to Route an IPX, How Do You Configure a Cisco Router?

The first thing you must do is to use the command “IPX routing” if you want to enable IPX routing. Every interface within the network will then be configured or changed with an encapsulation method and network number.

List the Different IPX Access Lists.

In networking, there are two access lists:

1. Standard
2. Extended

The former access list is only used to filter the IP address of the source or destination. The latter access list filters a network using the source and destination IP addresses, protocol, socket and port.

What are the Benefits of VLANs?

A VLAN will allow you to create a collision domain using groups instead of just the physical location. You can establish numerous networks via different means using the VLANs. You can use different types of hardware, functions, protocols and other means to establish the network. This is one the biggest advantages of using a VLAN when compared to the LAN. In the latter the collision domain is only connected to the physical location.

Define Subnetting.

Subnetting is a process of breaking a large network down into smaller networks. Since it is a part of the large network, every subnet will need to be assigned some identifiers or parameters that will indicate the subnet number.

List the Advantages of Using the Layered Model in the Networking Industry.

There are many advantages to using a layered network.

- An administrator can make changes only to one layer if necessary. He or she can also ensure that this change does not affect the other layers in the network.
- The network industry is allowed to progress faster since specialization is encouraged.
- Administrators can always troubleshoot problems or issues in the network efficiently.

Why do Administrators Prefer the TCP to UDP?

When compared to TCP, UDP is unsequenced and unreliable. This network cannot establish a virtual circuit or obtain any acknowledgement.

What Standards Does the Presentation Layer Support?

There are many standards that are used in the presentation layer which ensure that all the data in the layer is presented correctly. These standards include TIFF, JPEG and PICT for graphics and MPEG, QuickTime and MIDI for audio or video files.

How Can you Configure a Router Remotely?

There are times when you may need to configure the router remotely. One of the easiest ways to do this is to use a Cisco AutoInstall Procedure. The router should be connected to either the LAN or WAN through at least one interface.

What Does the Show Protocol Display?

The show protocol displays the following:

- The protocols that are routed on the configured router
- The address that is assigned to every interface
- The configured encapsulation method for every interface

How Can an IP Address be Depicted?[21]

An IP Address can be depicted in three ways:

- using Hexadecimal (for example: 82 1E 10 A1)
- using Binary (for example: 10000010.00111011.01110010.01110011)
- using Dotted-decimal (for example: 192.168.0.1)

Is There a Way to Switch to Privileged Mode, and What Should You

Do to Switch to the User Mode?

You can enter the command “enable” if you want to access the privileged mode. If you want to move back into the user mode, enter the command “disable” in the prompt.

Define HDLC.

High-Level Data Link Control or HDLC protocol is a Cisco protocol, and this is the default encapsulation that is operated in all Cisco routers.

What Process is Used to Create an Internetwork?

When numerous networks are connected using multiple routers, an internetwork is created. In this network, the network administrator should assign a logical address to each network connected to the same router.

What is Bandwidth?

The transmission capacity of every medium is called the bandwidth. This is used to measure the volume that any transmission channel can handle, and it is always measured in kilobytes per section.

How Do Hold-downs Work?

A hold-down will ensure that an update message does not reinstate any downed link. It does this by removing that link from that message. A triggered update is used to reset the hold-down timer.

What are Packets?

A packet is a result of data encapsulation. The packets are data that have been encapsulated or wrapped between the different OSI layers under different protocols. They are also called datagrams.

Define Segments.

A segment is a part of a data stream that moves from the top layers in OSI to the bottom layers, and towards the network. A segment is a logic unit that is found in the transport layer.

What are the Benefits of LAN Switching?

The benefits of LAN switching are:

- It allows the transmission of data through full duplex
- It allows media rate adaption
- It allows efficient and easy migration

How Can One Identify a Valid Host in any Subnet?

One of the easiest ways to do this is to use the following equation: 256 – (subnet mask). The valid hosts are found between those subnets.

Define DLCI.

Data Link Control Identifiers or DLCI are assigned to identify every virtual circuit, and these identifiers are assigned to these circuits using a frame relay service provider. These circuits exist on the same network.

How is a Cisco Router Secured? What are the Different Passwords That Can be Used?

You can use five types of passwords to protect a Cisco router. The different types are:

- Secret
- Terminal
- Virtual
- Auxiliary
- Console

Why Do Most Administrators Use Segmenting When They Need to Manage a Large Network?

Network administrators often use network segmenting to improve the traffic in the network. It also ensures that every user has a high bandwidth. This ensures that the network performs better. It is important to segment the network especially if it is a growing network.

Using a Cisco Router's Identifying Information, What Are the Things That You Can Access?

You can identify the interfaces and the hostname from the Cisco router's identifying information. The former is a fixed configuration that will refer to a router port while the latter will give you the name of the router.

What is the Difference Between Physical Topology and Logical Topology?

The physical topology will provide the actual layout of the medium in the network while the logical topology refers to the path that the signal takes through the physical topology.

How is the Router Hold-down Timer Reset Due to a Triggered Update?

A triggered update can reset the router's hold-down timer if the timer has expired. This happens when the router receives a processing task that was proportional to the number of links present in the internetwork.

What Command Should be Used If You Want to Delete Any Existing Configuration in a Router and Want to Reconfigure It?

A. erase startup-config

B. erase running-config

C. delete NVRAM

D. erase NVRAM

Correct Answer: A. erase startup-config

When You Look at the Commands Given Below, What is the Next Command that You Need to Use to Route the Traffic that is Going to the Router[22]?

Hostname: Branch Hostname: Remote

PH# 123-6000, 123-6001 PH# 123-8000, 123-8001

SPID1: 32055512360001 SPID1: 32055512380001

SPID2: 32055512360002 SPID2: 32055512380002

ISDN switch-type basic ni

username Remote password cisco

interface bri0

IP address 10.1.1.1 255.255.255.0

encapsulation PPP

PPP authentication chap

ISDN spid1 41055512360001

ISDN spid2 41055512360002

dialer map IP 10.1.1.2 name Remote 1238001

dialer-list 1 protocol IP permit

The answer is (config-if)# dialer-group 1

When you Configure a Router that Utilizes Both Logical and Physical Interfaces, What are the Factors that You Need to Consider When You Determine the OSPR Router ID?

A. The highest IP address of any interface.

B. The middle IP address of any logical interface.

C. The highest IP address of any physical interface.

D. The lowest IP address of any physical interface.

E. The highest IP address of any logical interface.

F. The lowest IP address of any interface.

G. The lowest IP address of any logical interface.

Correct Answer: C. The highest IP address of any physical interface.

What is the Difference Between the Hub, Router and Switch?

Routers are used to transmit the packets of data along the different networks. A switch is a tool or device that helps to filter packets or datagrams between various LAN segments. A switch can have either a single broadcast domain or multiple collision domains. A switch is used to support packet protocols, and it works in the second and third data link layers. A hub has both a multiple collision domain and a single domain. All the information that comes from one port will be sent out to another port.

Mention the Size of the IP Address.

An IP address has a size of 32 bits for IPv4 and 128s bit for IPv6.

What Does a Data Packet or a Datagram Consist Of?

A data packet or a datagram consists of the recipient's information, the sender's information and the information that is passed through the packet. The packet also contains the numeric information that will define the packet order and number. When the data is sent through the network, the information is broken down into smaller packets of data. These data packets will carry the data and the configuration for that message.

What is DHCP?

Dynamic Host Configuration Protocol or DHCP is used to assign the IP address to a specific workstation client. It can also be used to make a static IPS for

different machines like servers, printers, scanners and routers.

What is the Difference Between Static and Dynamic IP Addressing?

A static IP address is given to the network manually while a dynamic IP address is given to the network by the DHCP server.

What is the Range for a Private IPS?[23]

Ranges for private IPS are

- Class A: 10.0.0.0 – 10.0.0.255
- Class B: 172.16.0.0 – 172.31.0.0
- Class C: 192.168.0.0 – 192.168.0.255

How Can You Access a Router?

A router can be accessed in three ways:

- Console (Cable)
- AUX (Telephone)
- Telnet (IP)

What is EIGRP?

Enhanced Interior Gateway Routing Protocol or EIGRP, as the name suggests, is a routing protocol that was designed by Cisco. This protocol is used on routers to enable them to share a route with other routers on the same system. EIGRP, unlike RIP, can only send an incremental update thereby decreasing the amount of data that is transferred within the network.

What Does the EIGRP Protocol Consist Of?

EIGRP protocol consists of

- Delay
- Bandwidth
- Reliability
- Load

- MTU or Maximum Transmission Unit

What is the Function of a Clock Rate?

A clock rate is used to enable the DCE or router equipment to communicate effectively.

What Command is Used to Remove or Delete any Configuration Data in NVRAM?

You should use the command erase startup coding if you want to remove or delete the configuration data stored in the NVRAM.

State the Differences Between the UDP and TCP?[24]

UDP and TCP are two protocols that different systems use to send files across a network.

TCP (Transmission Control Protocol)	UDP (User Datagram Protocol)
TCP, a connection oriented protocol, is used to retrieve the lost part of a file. There are times when the connection may be lost when a file is being transferred. The TCP ensures that there is no data lost when a message is being transferred.	A UDP is a connectionless protocol, and when the data is sent via the network you cannot be certain that the message will reach the destination without there being any leak in the data.
The protocol ensures that the message reaches the destination in the order it was sent.	You can never be certain that the message will reach the destination in the same order.
The data in the TCP is always read as a stream, which means that the packets are closely connected.	The packet is always transmitted separately, and it is hard to ensure that the whole packet will arrive at the destination.

Example: World Wide Web, file transfer protocol, e-mail, etc.	Example: VOIP (Voice Over Internet Protocol), TFTP (Trivial File Transfer Protocol), etc.

What is the Difference Between Full Duplex and Half Duplex?

The communication will occur in both directions in a full duplex at any given time. In a half-duplex, the communication can only happen in one direction at one time.

What is the Process of Conversion in Data Encapsulation?

The steps in data encapsulation include:

- Layer one, two and three: These are the application, presentation and session layers respectively. It is in these layers that the alphanumeric input provided by the user is converted into Data.
- Layer Four: This is the transport layer, and it is in this layer that the data is broken down into smaller chunks or segments.
- Layer Five: This is the network layer, and it is in this layer that all the data is converted into datagrams or packets. A network header is added to the data.
- Layer Six: This is the Data Link layer where all the packets or datagrams are built into frames.
- Layer Seven: This is the Physical layer, and it is in this layer that the frames are converted to bits.

If the Router IOS is Stuck, What Command Should You Use?

If the router IOS is stuck, you will need to use the following command: Ctrl + Shift + F6 and X.

Define Route Poisoning.

There are times when a route becomes invalid, and it is important to prevent the

transmission of packets through this route. This transmission can be prevented through route poisoning.

In the Case of RIP, What Route Entry Will an Invalid or Dead Route be Assigned?

Sixteen hops will be assigned to an invalid or dead route if there is an RIP table entry. This will ensure that the route is unreachable.

Conclusion

Thank you for choosing this book, A Comprehensive Beginners Guide To Learn About The CCNA (Cisco Certified Network Associate) Routing And Switching Certification From A-Z. I sincerely hope it was very helpful in your journey towards getting best information to give your examination a chance.

I hope this book has been comprehensive and informative about everything related to the CCNA exam. Make use of all the tips given here to prepare and ace the exam when you sit for it in the future. You have to be rigorous in your preparation if you want to be confident while appearing for it. All your hard work will be worth the end result. This certification will pronounce you as a networking expert on a global scale. It will also prove that you have much more knowledge and expertise than any of your peers who are non-certified.

This book was written with the aim of equipping you with everything that you might need for passing the CCNA exam and get certified. It is true that the CCNA exams are definitely one of the more difficult exams in the IT industry. But this certificate will help professionals in validating and demonstrating their networking skills. This certification is a huge opportunity for growth in your career and you need to grasp it while you can.

If you are an aspirant of this CCNA Certification, I’m sure that this guide will help you achieve your goals. So, start preparing and get ready to ace the CCNA exam.

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