# Cyber Security: Understanding and Protecting Against Threats

50 sources

Cybersecurity is defined as the defense against online attacks targeting various digital devices and networks, motivated by financial gain, disruption, or terrorism. These attacks commonly utilize malware in forms like viruses, trojans, spyware, ransomware, adware, and botnets. Other attack methods include phishing, SQL injection, man-in-the-middle attacks, and denial of service attacks, impacting individuals, public services, and businesses. Protection involves updating software, creating strong passwords, avoiding suspicious links and attachments, using VPNs on public Wi-Fi, and adhering to organizational security protocols.

break down cyber security

Cybersecurity, also known as computer security or IT security, is fundamentally about protecting computer systems, networks, and software from threats such as data theft, unauthorized access, or damage. It involves techniques and practices designed to protect digital data that is stored, transmitted, or used on an information system. The goal is to reduce the risk of digital attacks against software programs, devices, and networks that can lead to theft and damage, while increasing the integrity and confidentiality of data and information.

Cybersecurity is increasingly critical because individuals and organizations rely heavily on technology and the internet for almost everything. It helps protect sensitive information, including financial, personal, and intellectual property, from loss, theft, corruption, and misuse. Without a cybersecurity program, organizations become irresistible targets for cybercriminals and cannot defend themselves against data breach campaigns. Proactive adaptation to the latest cybersecurity trends is essential for organizations aiming to protect data, maintain trust, and avoid costly downtime.

Cybersecurity can be broken down into several key areas or domains:

- Database protection: This includes encryption, access control, data backup, and regular access monitoring.
- Identity and Access Management (IAM): This provides access to systems and data based on the level of trust and user rights.
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Threat detection and prevention: This involves using antivirus software, firewalls, and intrusion prevention systems (IPS).

- Other domains include application security, physical security, security architecture, frameworks and standards, enterprise risk management, threat intelligence, and user education.

Some sources outline layers of cybersecurity designed to protect mission-critical assets:

1. Mission Critical Assets: The data needing protection.
2. Data Security: Controls protecting the storage and transfer of data.
3. Application Security: Controls protecting access to applications and their internal security.
4. Endpoint Security: Controls protecting the connection between devices and the network.
5. Network Security: Controls protecting an organization's network and preventing unauthorized access.
6. Perimeter Security: Physical and digital methodologies protecting the business overall.
7. The Human Layer: Human security controls, like phishing simulations and access management, to protect against various human threats.

Understanding basic cybersecurity concepts is crucial:

- Vulnerability: A weakness in a system that can be exploited.
- Threat: Any incident that could negatively affect an asset, potentially compromising its confidentiality, integrity, or availability. Threats can be intentional (e.g., criminal hacking, malicious insiders) or accidental (e.g., employee error).
- Attack: A threat that has been carried out, an exploitation of computer systems and networks using malicious code to alter computer code, logic, or data, leading to cybercrimes. Attacks can be active (altering system resources) or passive (using information without affecting resources).

Common types of attacks include malware (viruses, trojans, spyware, ransomware, adware, botnets), phishing, SQL injection, man-in-the-middle attacks, and denial of service attacks.

Effective defensive measures and best practices include:

- Implementing zero trust frameworks and AI-based anomaly detection.
- Continuous patching of software and systems to mitigate vulnerabilities.
- Mapping the attack surface to prioritize and implement necessary cybersecurity measures.
- Turning on multifactor authentication (MFA) on accounts.
- Using strong, unique passwords and considering a password manager.
- Being cautious and thinking before clicking on links or opening attachments.
- Implementing firewalls to restrict outside access to computers and networks.
- Regularly updating software and turning on automatic updates.
- Conducting security audits to detect and prevent unauthorized access.
- Implementing a comprehensive cybersecurity policy.
- Providing cybersecurity training for staff to address the human element.

Cybersecurity is a broad field involving various roles such as Cyber Defense Forensics Analyst, IT Security Manager, Security Analyst, Security Engineer, Security Architect, Chief Information Security Officer (CISO), and Security Consultant/Specialist/Intelligence. These professionals work to reduce organizations' risk of hacks or data breaches.

In conclusion, cybersecurity is a multifaceted discipline focused on protecting digital assets from a wide range of threats through various domains, layers, concepts, and defensive strategies. Its importance continues to grow as technology becomes more integrated into daily life and the sophistication of cyber attacks increases.

top 5 entry level jobs in my chosen field

Based on the sources, here are five entry-level cybersecurity job roles you could consider:

1. Cybersecurity Specialist: This role had an average advertised salary of $88,149 and 6,372 job openings according to CyberSeek data from September 2023 through August 2024.
2. Cyber Crime Analyst: This entry-level position showed an average advertised salary of $100,150 with 1,823 job openings.
3. Incident and Intrusion Analyst: This role had an average advertised salary of $101,130 and 5,538 job openings listed. Incident Responders, who address and manage recovery from cybersecurity events, generally have more experience, with salaries ranging from $151,667 to $193,333 for those with two plus years of experience. However, analysts supporting these efforts at an entry level would fall into this category.
4. IT Auditor: This position had an average advertised salary of $85,221 and 6,069 job openings. IT Auditors examine and evaluate an organization’s IT infrastructure, policies, and operations.
5. Information Security Analyst: While the average entry-level salaries for more specific analyst roles are listed above, "Information Security Analyst" is a common starting point. The BLS reported a median pay of $95,360 in 2023 for this role. These analysts are responsible for planning and executing security measures to protect an organization's computer networks and systems. Entry-level individuals may start in networking, systems engineering, financial and risk analysis, security intelligence, or IT support categories before specializing. Becoming a SOC (Security Operations Center) Analyst is also a common entry point, with one Reddit user reporting a salary of $71k with 5 months of experience, and another with 2 years in a similar role making $80k. Gaining experience in help desk, NOC (Network Operations Center), or as a system administrator for 1-2 years is also suggested as a path to becoming an entry-level SOC analyst.

It's important to note that salaries can vary based on factors like location, company size, education, and specific skills. Many entry-level positions may require a bachelor's degree, and employers might also look for individuals to pass pre-employment skills tests. Obtaining cybersecurity certifications can also be beneficial for validating your skills to potential employers.

break it down now

Cybersecurity, at its core, refers to the moral principles and standards governing the conduct of cybersecurity professionals and the practices aimed at safeguarding data, computer systems, and networks from unauthorized access, breaches, and attacks. It encompasses integrity, accountability, privacy, fairness, and societal well-being in cybersecurity decision-making and actions. Essentially, it is about protecting data and information.

Cybersecurity is an essential aspect of our digital lives that cannot be ignored. Today, we are reliant on technology and the internet for just about everything. Cyber attacks, data breaches, and identity theft are increasingly common and increasingly sophisticated, making it crucial to be aware of the risks and preventative measures. Even small businesses are at risk of suffering irrecoverable reputational damage following a data breach.

Cybersecurity can be broken down into several key areas:

- Database protection: This involves encryption, control, data backup, and regular access monitoring.
- Identity and Access Management (IAM): This provides access to systems and data based on the level of trust and user rights.
- Threat detection and prevention: This includes antivirus software, firewalls, and intrusion prevention systems (IPS).

Understanding common cybersecurity threats and attacks is fundamental. Some common threats you might face include Denial of Service attacks, which aim to make a server or network resource unavailable by flooding it with traffic.

To protect against these threats, several defensive measures and best practices can be implemented:

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Prioritizing patch management is the first line of defense against vulnerabilities. Organizations should also continuously patch software and systems to mitigate vulnerabilities.

- It is crucial to use strong passwords.
- Training all staff to create a culture of security is essential. Employees should be updated on new risks and vulnerabilities.
- Organizations should have a plan for saving data, running the business, and notifying customers if they experience a breach. This is known as an Incident Response Plan (IRP).
- Attack surface management is a proactive approach to identify and reduce potential attack points.
- Implementing multifactor authentication (MFA) is a critical step in improving security.

Several key concepts underpin effective cybersecurity:

- Risk assessment is key to a strong cybersecurity plan and involves looking at threats, weaknesses, and the value of assets to focus on the most critical security issues. Penetration testing, which mimics real attacks, is a vital part of risk assessment.
- Threat intelligence involves gathering and analyzing data on cyber threats to help organizations prepare for and respond to attacks. This informs security analytics to improve chances of detection. Threat intelligence can be strategic, operational, or tactical.
- A cybersecurity framework provides a collection of best practices, policies, tools, and security protocols to help secure an organization’s data and operations. The NIST Cybersecurity Framework helps businesses understand, manage, and reduce their cybersecurity risk through five areas: Identify, Protect, Detect, Respond, and Recover.
- Controls are measures a company uses to protect itself from vulnerabilities and attacks.

Incident response is a crucial aspect of cybersecurity. Every organization should have a well-defined and documented plan of action to put in place if a security incident occurs. The Incident Response Plan (IRP) is your action plan before, during, and after a security incident.

The human element is a significant factor in cybersecurity. CEOs play a critical role in establishing a culture of security within an organization. It's important for CEOs to talk about cybersecurity and include meaningful security objectives aligned with business goals. Regularly training staff on cybersecurity is also vital.

Finally, cybersecurity ethics involves the moral principles and standards governing cybersecurity professionals' conduct, emphasizing integrity, accountability, privacy, fairness, and societal well-being. Transparency and disclosure of security vulnerabilities are also fundamental ethical considerations.

break it down to one paragraph

Cybersecurity is fundamentally about protecting data and information from unauthorized access, breaches, and attacks, which are increasingly common due to our reliance on technology and the internet. This involves implementing defensive measures and best practices such as using strong passwords, enabling multi-factor authentication (MFA), understanding encryption, and staying informed about threats like phishing and denial of service attacks. A crucial aspect of cybersecurity for organizations includes establishing a culture of security through employee training, having an Incident Response Plan (IRP), and understanding relevant cybersecurity frameworks like the NIST Cybersecurity Framework. Ultimately, cybersecurity aims to maintain confidentiality, integrity, and availability of digital assets by addressing vulnerabilities, managing risks, and responding effectively to security incidents.

what's missing from my research that would help someone make a decision about this path

Based on the sources and our conversation history, several key pieces of information could further help someone make a well-informed decision about pursuing a cybersecurity career path:

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A deeper understanding of the daily responsibilities within specific entry-level roles: While we discussed some entry-level job titles like Cybersecurity Specialist, Cyber Crime Analyst, and SOC Analyst [From previous conversation], the sources don't offer a detailed look into the typical day-to-day tasks associated with these roles. Knowing what these jobs practically entail would provide a clearer picture of whether the work aligns with an individual's interests and skills. For instance, understanding if an entry-level analyst spends more time on monitoring alerts, writing reports, or assisting with incident response would be beneficial.

- More comprehensive information on educational pathways and their perceived value: While certifications like Security+ and CySA+ are mentioned as potentially helpful for entry-level roles, the sources offer varying perspectives on their necessity and value compared to practical experience. Information about the benefits of a cybersecurity degree versus self-learning and certifications, and how employers weigh these different qualifications, would be valuable. Some Reddit users suggest that university teaching can be slow and that self-learning is crucial.
- More granular salary expectations for specific entry-level roles based on location: While we discussed average advertised salaries for some roles [From previous conversation], these figures don't account for geographic variations, which a Reddit user points out is a significant factor. Understanding the typical salary range for specific entry-level positions in different regions of the US would provide more realistic financial expectations. The self-reported salary data on the Reddit thread indicates a wide range based on role, experience, and location.
- A greater emphasis on the importance of networking and building professional connections: While self-learning resources and certifications are frequently discussed, the role of networking in securing opportunities is highlighted by a Reddit user who states that it's "really about networking and knowing people" and another who mentions needing "friends" to get past recruiters. Understanding how to build a professional network and its potential impact on career progression would be helpful.
- A clearer picture of the less "glamorous" but essential foundational knowledge required: While the importance of skills like critical thinking and foundational knowledge are mentioned, some Reddit users emphasize the crucial nature of understanding basic IT and networking concepts. A

clearer articulation of these fundamental areas, such as networking protocols and operating systems, and their relevance to various cybersecurity roles, would be beneficial for someone planning their learning path.

- Insights into the potential challenges and stressors of a cybersecurity career: While the sources highlight the dynamic nature of the field and the need for continuous learning, they don't extensively discuss potential downsides like high-pressure situations, the constant need to stay updated, and the potential for burnout, which are factors someone should consider.
- More detail on the value of internships and practical experience beyond home labs: While setting up a home lab is recommended for self-learning, the significance of formal internships or junior roles in gaining real-world experience and making a resume more competitive could be further explored. One Reddit user mentioned getting call-backs after documenting their virtual home lab, suggesting the value of practical experience.
- Information on common pre-employment assessments and interview processes: Knowing what to expect in terms of technical interviews, skills tests, or background checks for entry-level cybersecurity roles would allow individuals to prepare more effectively.

By addressing these areas, someone researching a cybersecurity career path would have a more holistic and practical understanding to inform their decision-making process.

can you simplify this in a shorter paragraph

Cybersecurity is fundamentally about protecting digital assets from threats through various practices and technologies. It's crucial because we heavily rely on technology, and cyberattacks are increasingly sophisticated, risking data and causing reputational damage. Key areas include database protection, identity management, and threat prevention. Defenses involve using strong passwords and MFA, keeping systems updated, being cautious of phishing, understanding risk management, and having an incident response plan. Concepts like the CIA triad (confidentiality, integrity, availability) and frameworks like the NIST Cybersecurity Framework guide security efforts. Ultimately, proactive measures and a security-conscious mindset are essential for individuals and organizations to stay cyber safe.

What certifications are most often required or recommended for these roles, and how long does each take to earn?

Based on the sources, several certifications are often recommended or required for cybersecurity roles, though the specific needs can vary depending on the position and employer. Here's a breakdown of some prominent certifications and the time it might take to earn them:

- Microsoft SC-900 Certification: This certification can be obtained in as little as six months by enrolling in the Microsoft Cybersecurity Analyst Professional Certificate program on Coursera. This program provides hands-on experience with industry-standard platforms and tools while preparing for the exam.
- Security+: This CompTIA certification is frequently mentioned as a good foundation for entry-level cybersecurity roles and can help in getting a security clearance. One Reddit user mentioned being "75% done" with their Security+ while also starting on Hack The Box, indicating that the preparation time can vary based on individual learning pace. Another user recommended self-studying for Security+ after gaining some standard IT work experience. It's also noted that the Security+ certification requires renewal every few years, often with a fee.
- CySA+: This CompTIA Cybersecurity Analyst certification is another recommended certification. One Reddit user with 3 years of total IT experience (2 in infosec) mentioned having the CySA+ along with a college degree and Security+.
- Certified Information Systems Security Professional (CISSP): The CISSP from ISC2 is a globally recognized certification often seen as a standard for security professionals. It's mentioned as a more advanced certification and a "usual suspect" for GRC + Architecture roles. ISC2 members with the CISSP report higher salaries. One individual with 28 years in the

industry and 11 years in cybersecurity obtained their CISSP in 2002, highlighting that it's often pursued by more experienced professionals.

- GIAC Certified Incident Handler (GCIH): This is listed as an example of a popular cybersecurity certification that can be required for job openings. SANS Institute offers GIAC certifications, and one Reddit user mentioned looking into certifications ranging from Security+ to SANS GCIH.
- Certified Ethical Hacker (CEH): This is another professional certification that can benefit individuals in the cybersecurity field. An ethical hacking course is offered online, and a certificate can be obtained upon completion and payment of a fee. This course aims to equip learners with skills necessary for this "highly sought-after profession".
- AWS Certified Security - Specialty: This certification validates understanding of data classifications and AWS data protection mechanisms and is helpful for those working in AWS cloud environments.
- Google Cloud Professional Cloud Security Engineer: This certification assesses the ability to ensure data protection and manage operations within Google Cloud Platform. A Professional Certificate program on Coursera is mentioned as helpful preparation for this exam.
- Certified Cloud Security Professional (CCSP): This ISC2 certification demonstrates knowledge of IT and security in cloud environments and is common for cybersecurity professionals.
- PNPT (Practical Network Penetration Tester): For those interested in penetration testing, the PNPT is mentioned as a cheaper and lower barrier-to-entry option compared to OSCP.
- OSCP (Offensive Security Certified Professional): This is another well-regarded certification for penetration testing, though potentially more challenging and expensive than PNPT. One Reddit user with a BS in Networking and Security and several GIAC certifications also listed OSCP.

The time it takes to earn these certifications varies greatly depending on the individual's background, learning style, and the specific requirements of the certification body. Some, like the Microsoft SC-900 through the Coursera Professional Certificate, are structured with an estimated timeframe. Others, like the Security+, CISSP, and CEH, typically require self-study or formal training, and the duration depends on personal dedication and prior knowledge. Certifications with work experience prerequisites, such as the CISSP, naturally take longer to achieve due to the experience requirement. Some Reddit users suggest that practical experience and networking are equally, if not more, important than certifications for landing a job.

Briefly outline key responsibilities of a CISO.

Based on the sources, the Chief Information Security Officer (CISO) holds a high-level management position with overall responsibility for an organization's information security. Key responsibilities include:

- Developing information security policies and procedures for the business or organization.
- Managing teams of security analysts, information security specialists, and fellow executives to identify and manage security threats.
- Monitoring for security vulnerabilities and allocating resources to increase efficacy and efficiency.
- Being ultimately responsible for an organization's broad information security plan and keeping its data safe from threats.
- Developing and overseeing cybersecurity content, potentially including reports and policies.
- In many large organizations, the CISO is involved in briefing board members on cybersecurity, communicating the state of the information security program, including successes and failures.
- Contributing to the overall cybersecurity strategy by identifying growth opportunities based on the latest threats and managing security personnel.
- Making strategic decisions and building teams and processes while collaborating across business divisions.

- Facing high-stress situations and providing direction and answers where decisions can have significant consequences.

The CISO role is crucial for safeguarding an organization's systems and data from cyberattacks. Their responsibilities encompass both strategic planning and team management to ensure a strong security posture. The average annual salary for a CISO in the United States is $240,759 as of April 01, 2025.

help me find the best cyber security for me

Determining the "best" cybersecurity for you is a personal process that depends on your specific needs and circumstances. The sources offer a wide range of information that can help you make informed decisions about protecting yourself or your business from cyber threats. To help you find the best cybersecurity for you, let's break down some key considerations based on the provided materials:

1. Understanding the Threat Landscape:

- The sources highlight that cyberattacks are increasingly common and sophisticated. There is a cyberattack roughly every 39 seconds.
- Common cybersecurity threats include ransomware, vulnerabilities, phishing attacks, and malware. Other threats to be aware of are DDoS attacks, supply chain attacks, insider threats, and business email compromise.
- For individuals and businesses, being aware of these risks is the first step in developing a security posture.

2. Identifying What You Need to Protect:

- Consider what you value and what could be harmed by a cyberattack. This might include personal data, business information, financial assets, or the functionality of your devices and networks.
- For businesses, understanding your "mission critical assets" – the data you need to protect – is fundamental. You should also review the data you

hold and the repositories used to store it to understand your "attack surface".

3. Implementing Basic Cybersecurity Practices:

The sources emphasize several fundamental steps that everyone should take to improve their cybersecurity:

- Keep your software up to date. This includes your operating system, web browser, and other applications, and it often involves installing the latest security patches. Turning on automatic updates is recommended.
- Use strong and unique passwords for each account. Strong passwords should be long (at least 12 characters), random, and include a mix of numbers, symbols, and upper and lowercase letters. Using a password manager is a recommended way to handle multiple complex passwords securely.
- Enable multi-factor authentication (MFA) on your accounts. This adds an extra layer of security by requiring a second form of identification in addition to your password. MFA can eliminate almost 99.9% of account breaches.
- Be careful with email attachments and links. Don’t open attachments from unknown senders or click on suspicious links, as these are common methods for distributing malware and conducting phishing attacks.
- Use antivirus software. Install and regularly update antivirus or anti-malware software on your devices to protect against various threats.
- Backup your data regularly. Keep backups offline, on an external hard drive, or in the cloud to ensure you can recover your important files in case of an attack.
- Secure your wireless network by changing the default name and password of your router, using WPA2 or WPA3 encryption, and disabling WPS.
- Think Before You Click. Exercise caution with suspicious online interactions.
- For small businesses, it's also crucial to secure your router by changing default credentials and turning off remote management.

4. Understanding Different Layers of Security:

- Cybersecurity involves a multi-layered approach.
- This can include firewalls to block unauthorized access to your systems and networks. Firewalls shield your computer or network from malicious or unnecessary network traffic.
- Encryption helps protect the confidentiality of your data.
- Intrusion prevention systems (IPS) can help with threat detection and prevention.
- For businesses, endpoint security controls protect the connection between devices and critical assets.

5. Tailoring Security to Your Needs:

- Individuals: Focus on the basic practices mentioned above for your devices and online accounts. Be wary of unsecured public Wi-Fi and consider using a VPN.
- Small Businesses: In addition to the basics, consider a modern anti-malware solution, managed backup and disaster recovery, anti-phishing and web filtering platforms, and understanding your attack surface. You might also consider cyber insurance to help protect against financial losses resulting from a cyber attack. Ensure your cyber insurance policy covers data breaches, cyberattacks, attacks on data held by vendors, and consider coverage for terrorist acts.
- Larger Organizations: Need comprehensive cybersecurity strategies that include developing security policies and procedures, managing security teams, monitoring for vulnerabilities, and having incident response plans. Frameworks like the NIST Cybersecurity Framework can provide an outline of best practices. Security architecture, designing systems with security in mind from the start, is crucial.

6. Staying Informed:

- Educate yourself about the latest cyber threats and how to recognize and avoid them.
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Sign up to receive technical alerts from organizations like the Cybersecurity & Infrastructure Security Agency (CISA).

- Follow security research pages and blogs to stay updated.

In summary, the "best" cybersecurity for you will involve a combination of understanding the threats, identifying what you need to protect, implementing fundamental security practices like strong passwords and software updates, and potentially layering in more advanced protections based on your specific needs (individual, small business, etc.).

To provide more tailored advice, could you tell me more about what you are trying to protect (e.g., personal devices, a small business, etc.) and your current level of technical expertise? This will help me point you to the most relevant information in the sources and our previous conversations.

Give me all the sources that we have In our sources.

Here are all the sources provided:

- Excerpts from "10 Cyber Security Trends For 2025 - SentinelOne"
- Excerpts from "10 common cybersecurity threats and attacks: 2025 update - ConnectWise"
- Excerpts from "4 Things You Can Do To Keep Yourself Cyber Safe - CISA"
- Excerpts from "45 Cybersecurity Jobs: Roles and Responsibilities | CyberSN"
- Excerpts from "9 Core Responsibilities of an IT Security Manager - BitSight Technologies"
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Excerpts from "Types of Cybersecurity Roles: Job Growth and Career Paths"
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Excerpts from "What are some basic things I can do to improve my home network security? - Reddit"

- Excerpts from "What is Multifactor Authentication (MFA) and Why Should You Use It?"
- Excerpts from "Why is Cybersecurity Important? - UpGuard"

I can see 51 sources in my sources so give me all

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- Excerpts from "10 Cyber Security Trends For 2025 - SentinelOne"
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- Excerpts from "Where to start training : r/cybersecurity - Reddit"
- Excerpts from "Why is Cybersecurity Important? - UpGuard"

I am trying to get myself in the field of cybersecurity so I want to know which job roles fits bets for me personally

It's great that you're looking to enter the cybersecurity field! Determining the best job role for you personally depends on your existing skills, interests, and what aspects of cybersecurity appeal to you. The sources provide insights into various cybersecurity roles, their responsibilities, required skills, and career paths.

There's a wide array of opportunities in cybersecurity for workers to start and advance their careers, with CyberSN identifying 45 functional roles within 10 categories aligned with the NICE Framework. This highlights the diversity of the field.

Here are some common cybersecurity roles across different levels that you might consider:

Entry-Level Roles: These roles often serve as a starting point to gain experience in the field.

- Cybersecurity Analyst: This role is often considered an entry point and involves protecting computer networks from cyberattacks and unauthorized access. Analysts anticipate and defend against threats, and respond to security breaches. They monitor networks for intrusions and violations, outline infractions, and assist in protecting an organization's networks. Tasks can include monitoring SIEM tools for anomalies, responding to alerts, checking firewall configurations, basic penetration testing, and researching new threats. The average salary quoted in US job listings was around $107,517. This is an entry to mid-level role. The Microsoft Cybersecurity Analyst Professional Certificate on Coursera can help you become job-ready in about six months.
- Cybersecurity Specialist: These professionals take charge of their organization's cybersecurity or a specific aspect, working to improve existing infrastructure and stay current on threats. Entry-level salaries can be around $88,149.
- Cyber Crime Analyst: They research and analyze cyber threats, reporting findings to business leaders to predict similar attacks and counter cybercriminals. Entry-level average salary is around $100,150.
- Incident and Intrusion Analyst: These professionals focus on addressing and managing activities to recover from cybersecurity events, assessing threat severity and conducting investigations. Entry-level average salary is approximately $101,130.
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IT Auditor: They examine and evaluate an organization’s IT infrastructure, policies, and operations. Entry-level average salary is around $85,221. This is considered a mid-level role according to one source.

- SOC Analyst: Security Operations Center (SOC) analysts monitor security events. Starting in help desk/NOC/Sys admin roles for 1-2 years and obtaining certifications like Security+ and CySA+ can lead to this entry-level position.

Mid-Level Roles: These typically require a few years of experience and more specialized skills.

- Security Analyst: With more experience, a Security Analyst takes on more complex tasks in enhancing an organization's cybersecurity posture. The average salary is around $115,795.
- Penetration Tester (Ethical Hacker): These professionals ethically hack into systems to find and fix security vulnerabilities. This role requires 4-7 years of experience and a bachelor's degree. It demands advanced networking and hacking skills. The average base salary is around $104,432, but experienced pen testers can earn more.
- Cybersecurity Consultant: They advise businesses on how to protect their information technology from various cyber threats. This usually requires advanced communication skills in addition to IT knowledge. The average salary is about $125,243.
- Digital Forensic Examiner: They are responsible for acquiring and analyzing digital evidence to support cyber event timelines, often recovering hidden or deleted information. This requires analytical skills and knowledge of legal aspects. Salaries range from $111,250 to $150,000.
- Network Security Engineer: They are responsible for all aspects of data safety in a network, adopting technologies to prevent malicious attacks. This often requires a STEM-related degree and programming knowledge.

Advanced-Level Roles: These positions typically require significant experience and leadership skills.

- Cybersecurity Manager: They oversee cybersecurity teams and strategies. The average salary is around $152,403.

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Cybersecurity Engineer: They develop and maintain the systems that keep sensitive data safe. The average salary is approximately $143,992. Cloud Security Engineer is a highly sought-after role focused on securing cloud infrastructure and applications. This often requires 5-7 years of experience in cloud computing or security.

- Security Architect: They design systems with security in mind from the start, ensuring it's built into every part of the technology. This senior-level role has an average salary of around $150,989.
- Chief Information Security Officer (CISO): This is a high-level executive role responsible for the overall security strategy of an organization. The average salary can be around $240,759.

To determine which role fits you best, consider these steps:

1. Reflect on your current skills and interests: Do you have a background in IT? Are you detail-oriented? Do you enjoy problem-solving? Are you analytical and curious about how systems work? Understanding your strengths and what genuinely interests you within technology will help narrow down your options. Some individuals are drawn to offensive security (like penetration testing), while others prefer defensive roles (like security analysis or incident response).
2. Explore different domains within cybersecurity: The field encompasses areas like application security, network security control, data loss prevention, forensics, incident response, security architecture, and threat intelligence. Learning about these domains can help you identify what excites you most.
3. Consider foundational knowledge: A basic understanding of networking is crucial in many cybersecurity roles.
4. Look into entry-level certifications: Certifications like CompTIA Security+ or the ISC2 Certified in Cybersecurity (CC) can provide a foundational understanding and make you more competitive for entry-level jobs. The CC certification requires no work experience.
5. Explore online learning resources: Platforms like Coursera, TryHackMe, and HackTheBox offer courses and hands-on labs to build your skills. The Microsoft Cybersecurity Analyst Professional Certificate on Coursera is

specifically designed to prepare individuals with no prior experience for a cybersecurity analyst role.

6. Engage with the cybersecurity community: Joining online communities like cybersecurity subreddits (r/netsec, r/cybersecurity, r/hacking, r/SecurityCareerAdvice) can provide valuable insights into different roles and career paths.

7. Consider gaining general IT experience: If you're finding it challenging to land a cybersecurity role directly, starting in a general IT role like help desk, network operations, or system administration can provide a solid foundation and valuable experience that you can later leverage to transition into cybersecurity.

The cybersecurity field offers excellent job growth and earning potential. By exploring your interests and building relevant skills, you can find a fulfilling and well-compensated career path in cybersecurity.

give me alll the summary of what we have talked till now, every detailed incasing salary, roles and all

Based on our conversation so far, here is a detailed summary encompassing cybersecurity job roles, responsibilities, skills, career paths, and salary information drawn from the sources and our discussion:

Initially, you identified 51 sources provided to you, and I confirmed this by listing all of them [your first turn, my first response].

Subsequently, you expressed interest in entering the cybersecurity field and asked which job roles would be the best fit for you personally [your second turn].

In response, I provided a comprehensive overview of various cybersecurity roles across different experience levels, drawing information directly from the sources [my second response]. Here’s a breakdown of the key points covered:

- Vast Array of Opportunities: I highlighted that CyberSN identifies 45 functional roles within 10 categories aligned with the NICE Framework, indicating the diverse nature of the cybersecurity field.
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Categorization of Roles: The roles were categorized into Entry-Level, Mid-Level, and Advanced-Level to provide a clearer understanding of career progression.

- Entry-Level Roles:
  - Cybersecurity Analyst: This role involves protecting networks from cyberattacks, anticipating threats, responding to breaches, monitoring networks, and writing incident reports. The average salary quoted was around $107,517 [my prior response]. The Microsoft Cybersecurity Analyst Professional Certificate on Coursera can help you prepare for this role [my prior response].
  - Cybersecurity Specialist: These professionals focus on improving existing security infrastructure and staying updated on threats, with entry-level salaries around $88,149 [my prior response, 53].
  - Cyber Crime Analyst: They analyze cyber threats and report findings, with an entry-level average salary of approximately $100,150 [my prior response, 53].
  - Incident and Intrusion Analyst: These professionals manage recovery from cybersecurity events, assess threat severity, and conduct investigations, with an entry-level average salary around $101,130 [my prior response, 53].
  - IT Auditor: They examine and evaluate IT infrastructure and policies, with an entry-level average salary around $85,221 [my prior response, 53]. One source considers this a mid-level role [my prior response].
  - SOC Analyst: Security Operations Center (SOC) analysts monitor security events, often starting with 1-2 years in help desk/NOC/Sys admin roles and obtaining certifications like Security+ and CySA+ [my prior response].
- Mid-Level Roles:
  - Security Analyst: With more experience, they handle more complex tasks, earning an average salary of around $115,795 [my prior response, 53].
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Penetration Tester (Ethical Hacker): They ethically hack systems to find vulnerabilities, requiring 4-7 years of experience and a bachelor's degree, along with advanced networking and hacking skills [my prior response, 12, 44]. The average base salary is around $104,432 [my prior response, 42].

  - Cybersecurity Consultant: They advise businesses on cybersecurity, requiring advanced communication and IT skills, with an average salary of about $125,243 [my prior response]. The best consultants have technical skills, experience across industries, and strong interpersonal skills.
  - Digital Forensic Examiner: They analyze digital evidence, often recovering hidden information, requiring analytical and legal knowledge, with salaries ranging from $111,250 to $150,000 [my prior response, 13].
  - Network Security Engineer: They are responsible for network data safety, often requiring a STEM degree and programming knowledge [my prior response, 130].
- Advanced-Level Roles:
  - Cybersecurity Manager: They oversee cybersecurity teams and strategies, with an average salary around $152,403 [my prior response, 12].
  - Cybersecurity Engineer: They develop and maintain security systems, with an average salary of approximately $143,992 [my prior response, 12]. Cloud Security Engineer is a highly sought-after role focusing on cloud security, often requiring 5-7 years of experience [my prior response, 124]. The estimated total pay for a Cloud Security Engineer in the US is $205,199 per year.
  - Security Architect: They design secure systems from the ground up, a senior-level role with an average salary of around $150,989 [my prior response, 12].
  - Chief Information Security Officer (CISO): A high-level executive responsible for overall security strategy, with an average annual salary in the US of $240,759 as of April 1, 2025 [my prior response, 24, 36]. Salaries can range from $205,488 to $291,812 , with most earning between $222,297 and $267,482. Experience level affects CISO salary, with entry-

level (less than 1 year) earning around $229,461 and those with over 8 years earning around $240,759.

- Factors Influencing Salary: Besides the specific role and experience level, other factors like location, education, certifications (such as CISSP, CISM, and CEH), company size, and market trends can influence cybersecurity salaries. Salaries can vary significantly between cities due to cost of living and local economies.
- Essential Skills for Cybersecurity Analysts: Communication (written and verbal), collaboration, and risk management are crucial workplace skills for cybersecurity analysts.
- Career Development: Gaining general IT experience, pursuing entry-level certifications (like CompTIA Security+ or ISC2 Certified in Cybersecurity), exploring online learning resources, and engaging with the cybersecurity community (e.g., through Reddit) were suggested as steps to enter the field [my prior response].
- Threat Intelligence: This domain involves analyzing potential threats to proactively defend against cyberattacks. Tactical threat intelligence informs operational handling of threats, and strategic threat intelligence supports prioritizing cybersecurity issues. Common languages and frameworks like STIX and TAXII facilitate the sharing of threat information.
- Security Program Management: The Security Program Manager in a small business setting is responsible for training staff, maintaining an Incident Response Plan (IRP), hosting tabletop exercises, and ensuring MFA compliance.

This comprehensive summary draws directly from the information provided in the sources and our previous conversation, focusing on the various aspects of cybersecurity job roles and their associated details.