**Research Assessment #1**

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**Subject:** Information Security Analyst Career Outlook

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“Information Security Analysts.” Occupational Outlook Handbook, U.S. Bureau of Labor Statistics, www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm#tab-1. Accessed 4 Sept. 2017.

**Assessment:**

Entering the Independent Study and Mentorship Program, I possess an adequate knowledge of Networking and Computer Science and the desire to combine the two within the field of Cybersecurity. To begin my journey into this ever-changing and expanding field, I researched the career outlook of a common Cybersecurity job, an Information Security Analyst from an article published by the U.S. Bureau of Labor Statistics. Through this article, I gained an idea of what to expect in regards to job duties, salary, trends, and more.

The first and most important part of this job that I researched was the description of an Information Security Analyst. Though many duties fall under this job title, the ones I found most appealing were the penetration testing aspect due to its technical nature, as well as developing best security practices and improvements for the organization because of the leadership role it provides. I was surprised to learn that a job requirement for analysts may be to attend Cybersecurity conferences. This type of gathering seems like an ideal place to build my network and find a potential mentor, and is something I need to research further for opportunities in the DFW area. I found it interesting that a person with this job title would often report to C-level management, as it implies that information security is one of companies’ top priorities. I am curious as to how analysts are able to keep up with emerging trends in cybersecurity, as well as the specific manner in which they deploy security measures and detect breaches. I need to conduct more research on this, as it is one of the top priorities of this job title. I am also sure that under a mentor I will be able to observe more specifics on how networks and information are kept secure.

Regarding the work environment of Information Security Analysts, I found that Information Security Analysts are often always on call and work extensive hours, which I expected since hackers don’t follow schedules, and analysts must always be ready to respond to threats. I was surprised to learn the high percentage of analysts currently employed by the credit deposit industry. It helped me in understanding that Cybersecurity is a unique field in that it in a sense encompasses *every* field. I came to the conclusion that as computerization and new technology permeates into the world and workforce, more industries need to be kept secure by Information Security Analysts. This led me to the questions of what new fields will be in need of Cybersecurity experts by the time I am ready to enter the workforce? Which fields will be able to survive without information security? Will this significantly impact growth in the Information Security profession? Currently, the rapid adoption of new technology throughout industries is in fact affecting job growth of Information Security professionals, as the job outlook is increasing at a rate much more rapid than the average job. I had anticipated this since as technology is increasingly becoming evident in all aspects of life there will undoubtedly be more people needed to keep networks secure. This is a positive aspect of the Cybersecurity industry, as when I graduate finding a job will not be as difficult due to plentiful opportunities. I also discovered that if I wish to specialize in one of the many industries that Cybersecurity is in, I should look into gaining experience in that industry as well. If I choose to specialize further within a specific industry, will my responsibilities grow to include duties specific to that industry? This is something I will need to research more in the future. Since this is such a new field, I found that the education requirements of this job amount to a Bachelors in a Computer-related degree. This goes along with my original plan to attain my Bachelors in Computer Science. However, I found that some employers also ask for a Master’s in Business Administration rather than Computer Science. This indicates to me that the roles of this position are not heavily technical, but also managerial. It also means that I may have to attend another two years of school in a business-related capacity, something I should take into account when planning my future. Currently, I have found myself to be on track to pursue cybersecurity, as I have been taking all the computer science and networking classes available to me in high school.

I found the qualities needed to be successful in this field (analytical skills, detail-oriented, ingenuity, problem solving) to be universal for almost all computer-related fields, most prominently including programming and computer science. I believe this to be a positive aspect of Information Security Analysis, as there are many related jobs I could pursue. I was surprised at the wide variety of certifications and licenses with regard to the field of Information Security. So far, I have no certifications nor have had prior knowledge of the requirements of these certifications, but I should explore more into this area. Is there a certification considered to be the industry standard? Are there licenses and certificates available for me to pursue currently? Do these certifications affect position and salary? As I progress I will need to research these more, and potentially pose these questions in my interviews and to my mentor. With my previous knowledge in computer science and networking, I am very interested in gaining the certifications I can.

Since security is such an important thing to most people, I expected the average salary of an Information Security Analyst to be fairly high, and I was correct. At around $92,600, pursuing this career would definitely provide me with a comfortable lifestyle. Once at this position however, I would also have the opportunity to rise to as far as a C-level position such as CSO, CISO, or CIO. I like this aspect of the Information Security Analyst position as it does not limit how high I would be able to rise in a corporate structure to a lower position. Advancement opportunity is important to me, and I found it comforting that it is attainable with this position. However it also prompts the question of what additional work is required to rise in position? Do these levels largely lose the technical aspect of information security to focus on managing employees? As interested as I am in advancing, the technical aspect of this field is one I find fascinating and I would like to stay in a position that affords me the opportunity to both take on a leadership/management role and work in a technical capacity.

This article provided me with a large amount of information regarding the career outlook in Cybersecurity and more specifically as an Information Security Analyst, but it also raised some questions. I am confident that more research as well as finding a mentor in this field will assist me in diving into these questions and discovering more about the new and expanding Cybersecurity industry.

** Bureau of Labor Statistics U.S. Bureau of Labor Statistics**

**Information Security Analysts**

**Summary**

Information security analysts work to protect a company’s computer systems.

| **Quick Facts: Information Security Analysts** | |
| --- | --- |
| **2016 Median Pay** | $92,600 per year  $44.52 per hour |
| **Typical Entry-Level Education** | Bachelor's degree |
| **Work Experience in a Related Occupation** | Less than 5 years |
| **On-the-job Training** | None |
| **Number of Jobs, 2014** | 82,900 |
| **Job Outlook, 2014-24** | 18% (Much faster than average) |
| **Employment Change, 2014-24** | 14,800 |

[**What Information Security Analysts Do**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-2)

Information security analysts plan and carry out security measures to protect an organization’s computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increases.

[**Work Environment**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-3)

Most information security analysts work for computer companies, consulting firms, or business and financial companies.

[**How to Become an Information Security Analyst**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-4)

Most information security analyst positions require a bachelor’s degree in a computer-related field. Employers usually prefer to hire analysts with experience in a related occupation.

[**Pay**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-5)

The median annual wage for information security analysts was $92,600 in May 2016.

[**Job Outlook**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-6)

Employment of information security analysts is projected to grow 18 percent from 2014 to 2024, much faster than the average for all occupations. Demand for information security analysts is expected to be very high, as these analysts will be needed to create innovative solutions to prevent hackers from stealing critical information or causing problems for computer networks.

[**State & Area Data**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-7)

Explore resources for employment and wages by state and area for information security analysts.

[**Similar Occupations**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-8)

Compare the job duties, education, job growth, and pay of information security analysts with similar occupations.

[**More Information, Including Links to O\*NET**](https://www.bls.gov/ooh/computer-and-information-technology/print/information-security-analysts.htm#tab-9)

Learn more about information security analysts by visiting additional resources, including O\*NET, a source on key characteristics of workers and occupations.

**What Information Security Analysts Do**

Information security analysts install software, such as firewalls, to protect computer networks.

Information security analysts plan and carry out security measures to protect an organization’s computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increases.

**Duties**

Information security analysts typically do the following:

* Monitor their organization’s networks for security breaches and investigate a violation when one occurs
* Install and use software, such as firewalls and data encryption programs, to protect sensitive information
* Prepare reports that document security breaches and the extent of the damage caused by the breaches
* Conduct penetration testing, which is when analysts simulate attacks to look for vulnerabilities in their systems before they can be exploited
* Research the latest information technology (IT) security trends
* Help plan and carry out an organization’s way of handling security
* Develop security standards and best practices for their organization
* Recommend security enhancements to management or senior IT staff
* Help computer users when they need to install or learn about new security products and procedures

Information security analysts must continually adapt to stay a step ahead of cyberattackers. They must stay up to date on the latest methods attackers are using to infiltrate computer systems and on IT security. Analysts need to research new security technology to decide what will most effectively protect their organization. This may involve attending cybersecurity conferences to hear firsthand accounts of other professionals who have experienced new types of attacks.

IT security analysts are heavily involved with creating their organization’s disaster recovery plan, a procedure that IT employees follow in case of emergency. These plans allow for the continued operation of an organization’s IT department. It includes preventive measures such as regularly copying and transferring data to an offsite location. It also involves plans to restore proper IT functioning after a disaster. Analysts continually test the steps in their recovery plans.

Because information security is important, these workers usually report directly to upper management. Many information security analysts work with an organization’s computer and information systems manager or chief technology officer (CTO) to design security or disaster recovery systems.

**Work Environment**

Many analysts work in IT departments and manage the security of their companies computer networks.

Information security analysts held about 82,900 jobs in 2014. The largest employers of information security analysts were as follows:

|  |  |
| --- | --- |
| Computer systems design and related services | 26% |
| Information | 10 |
| Management of companies and enterprises | 8 |
| Depository credit intermediation | 7 |
| Management, scientific, and technical consulting services | 5 |

Many information security analysts work with other members of an information technology department, such as network administrators or computer systems analysts.

**Work Schedules**

Most information security analysts work full time. Information security analysts sometimes have to be on call outside of normal business hours in case of an emergency at their organization. About 1 in 4 worked more than 40 hours per week in 2014.

**How to Become an Information Security Analyst**

Information security is a new field and many schools are still developing programs to teach the subject.

Most information security analyst positions require a bachelor’s degree in a computer-related field. Employers usually prefer analysts to have experience in a related occupation.

**Education**

Information security analysts usually need at least a bachelor’s degree in computer science, programming, or a related field. As information security continues to develop as a career field, many schools are responding with information security programs for prospective job seekers. These programs may become a common path for entry into the occupation. Currently, a well-rounded computer education is preferred.

Employers of information security analysts sometimes prefer applicants who have a Master's of Business Administration (MBA) in information systems. Programs offering the MBA in information systems generally require 2 years of study beyond the undergraduate level and include both business and computer-related courses.

**Work Experience in a Related Occupation**

Information security analysts generally need to have previous experience in a related occupation. Many analysts have experience in an information technology department, often as a [network or systems administrator](https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm). Some employers look for people who have already worked in fields related to the one in which they are hiring. For example, if the job opening is in database security, they may look for a database administrator. If they are hiring in systems security, a computer systems analyst may be an ideal candidate.

**Licenses, Certifications, and Registrations**

There are a number of information security certifications available, and many employers prefer job candidates to have one. Certification validates the knowledge and best practices required from information security analysts. Some are general information security certificates, such as the Certified Information Systems Security Professional, and others have a narrow focus, such as penetration testing or systems auditing.

**Advancement**

Information security analysts can advance to become chief security officers or another type of [computer and information systems manager](https://www.bls.gov/ooh/management/computer-and-information-systems-managers.htm).

**Important Qualities**

***Analytical skills*.** Information security analysts must carefully study computer systems and networks and assess risks to determine how security policies and protocols can be improved.

***Detail oriented*.** Because cyberattacks can be difficult to detect, information security analysts pay careful attention to their computer systems and watch for minor changes in performance.

***Ingenuity.*** Information security analysts anticipate information security risks and implement new ways to protect their organizations’ computer systems and networks.

***Problem-solving skills*.** Information security analysts respond to security alerts and uncover and fix flaws in computer systems and networks.

**Pay**

**Information Security Analysts**

Median annual wages, May 2016

**Information security analysts**

$92,600

**Computer occupations**

$82,860

**Total, all occupations**

$37,040

Note: All Occupations includes all occupations in the U.S. Economy.  
Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics

The median annual wage for information security analysts was $92,600 in May 2016. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than $53,760, and the highest 10 percent earned more than $147,290.

In May 2016, the median annual wages for information security analysts in the top industries in which they worked were as follows:

|  |  |
| --- | --- |
| Management, scientific, and technical consulting services | $101,440 |
| Computer systems design and related services | 93,490 |
| Information | 92,940 |
| Depository credit intermediation | 92,580 |
| Management of companies and enterprises | 87,510 |

Most information security analysts work full time. Information security analysts sometimes have to be on call outside of normal business hours in case of an emergency at their organization. About 1 in 4 worked more than 40 hours per week in 2014.

**Job Outlook**

**Information Security Analysts**

Percent change in employment, projected 2014-24

**Information security analysts**

18%

**Computer occupations**

12%

**Total, all occupations**

7%

Note: All Occupations includes all occupations in the U.S. Economy.  
Source: U.S. Bureau of Labor Statistics, Employment Projections program

Employment of information security analysts is projected to grow 18 percent from 2014 to 2024, much faster than the average for all occupations.

Demand for information security analysts is expected to be very high. Cyberattacks have grown in frequency, and analysts will be needed to come up with innovative solutions to prevent hackers from stealing critical information or creating problems for computer networks.

The federal government is expected to greatly increase its use of information security analysts to protect the nation’s critical information technology (IT) systems. In addition, as the healthcare industry expands its use of electronic medical records, ensuring patients’ privacy and protecting personal data are becoming more important. More information security analysts are likely to be needed to create the safeguards that will satisfy patients’ concerns.

Employment of information security analysts is projected to grow 36 percent in computer systems design and related services from 2014 to 2024. The increasing adoption of cloud services by small- and medium-sized businesses that do not have their own dedicated IT departments could increase the employment of information security analysts in those establishments.

**Job Prospects**

Job prospects for information security analysts should be good. Information security analysts with related work experience will have the best prospects. For example, an applicant with experience as a database administrator would have better prospects in database security than someone without that experience.

| **Employment projections data for information security analysts, 2014-24** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Occupational Title** | **SOC Code** | **Employment, 2014** | **Projected Employment, 2024** | **Change, 2014-24** | | **Employment by Industry** | |
| **Percent** | **Numeric** |
| SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program | | | | | | | |
| **Information security analysts** | 15-1122 | 82,900 | 97,700 | 18 | 14,800 | [[XLSX](https://www.bls.gov/emp/ind-occ-matrix/occ_xlsx/occ_15-1122.xlsx)] |  |

**State & Area Data**

**Occupational Employment Statistics (OES)**

The [Occupational Employment Statistics](https://www.bls.gov/oes/) (OES) program produces employment and wage estimates annually for over 800 occupations. These estimates are available for the nation as a whole, for individual states, and for metropolitan and nonmetropolitan areas. The link(s) below go to OES data maps for employment and wages by state and area.

* [Information security analysts](https://www.bls.gov/oes/current/oes151122.htm#st)

**Projections Central**

Occupational employment projections are developed for all states by Labor Market Information (LMI) or individual state Employment Projections offices. All state projections data are available at [www.projectionscentral.com](http://www.projectionscentral.com/). Information on this site allows projected employment growth for an occupation to be compared among states or to be compared within one state. In addition, states may produce projections for areas; there are links to each state’s websites where these data may be retrieved.

**Career InfoNet**

America’s Career InfoNet includes hundreds of [occupational profiles](http://www.careerinfonet.org/Occupations/select_occupation.aspx?next=occ_rep&level=&optstatus=111111111&id=1&nodeid=2&soccode=&stfips=&jobfam=&menuMode) with data available by state and metro area. There are links in the left-hand side menu to compare occupational employment by state and occupational wages by local area or metro area. There is also a [salary info tool](http://www.careeronestop.org/SalariesBenefits/Sal_default.aspx) to search for wages by zip code.

**Similar Occupations**

This table shows a list of occupations with job duties that are similar to those of information security analysts.

|  | **OCCUPATION** | **JOB DUTIES** | **ENTRY-LEVEL EDUCATION** | **2016 MEDIAN PAY** |
| --- | --- | --- | --- | --- |
| [Computer and information research scientists](https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm) | [**Computer and Information Research Scientists**](https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm) | Computer and information research scientists invent and design new approaches to computing technology and find innovative uses for existing technology. They study and solve complex problems in computing for business, medicine, science, and other fields. | Doctoral or professional degree | $111,840 |
| [Computer and information systems managers](https://www.bls.gov/ooh/management/computer-and-information-systems-managers.htm) | [**Computer and Information Systems Managers**](https://www.bls.gov/ooh/management/computer-and-information-systems-managers.htm) | Computer and information systems managers, often called information technology (IT) managers or IT project managers, plan, coordinate, and direct computer-related activities in an organization. They help determine the information technology goals of an organization and are responsible for implementing computer systems to meet those goals. | Bachelor's degree | $135,800 |
| [computer network architects image](https://www.bls.gov/ooh/computer-and-information-technology/computer-network-architects.htm) | [**Computer Network Architects**](https://www.bls.gov/ooh/computer-and-information-technology/computer-network-architects.htm) | Computer network architects design and build data communication networks, including local area networks (LANs), wide area networks (WANs), and intranets. These networks range from small connections between two offices to next-generation networking capabilities such as a cloud infrastructure that serves multiple customers. | Bachelor's degree | $101,210 |
| [Computer programmers](https://www.bls.gov/ooh/computer-and-information-technology/computer-programmers.htm) | [**Computer Programmers**](https://www.bls.gov/ooh/computer-and-information-technology/computer-programmers.htm) | Computer programmers write and test code that allows computer applications and software programs to function properly. They turn the program designs created by software developers and engineers into instructions that a computer can follow. | Bachelor's degree | $79,840 |
| [Computer support specialists](https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm) | [**Computer Support Specialists**](https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm) | Computer support specialists provide help and advice to people and organizations using computer software or equipment. Some, called computer network support specialists, support information technology (IT) employees within their organization. Others, called computer user support specialists, assist non-IT users who are having computer problems. | [See How to Become One](https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-4) | $52,160 |
| [Computer systems analysts](https://www.bls.gov/ooh/computer-and-information-technology/computer-systems-analysts.htm) | [**Computer Systems Analysts**](https://www.bls.gov/ooh/computer-and-information-technology/computer-systems-analysts.htm) | Computer systems analysts study an organization’s current computer systems and procedures and design information systems solutions to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both. | Bachelor's degree | $87,220 |
| [Database administrators](https://www.bls.gov/ooh/computer-and-information-technology/database-administrators.htm) | [**Database Administrators**](https://www.bls.gov/ooh/computer-and-information-technology/database-administrators.htm) | Database administrators (DBAs) use specialized software to store and organize data, such as financial information and customer shipping records. They make sure that data are available to users and are secure from unauthorized access. | Bachelor's degree | $84,950 |
| [Information security analysts](https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm) | [**Information Security Analysts**](https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm) | Information security analysts plan and carry out security measures to protect an organization’s computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increases. | Bachelor's degree | $92,600 |
| [Network and computer systems administrators](https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm) | [**Network and Computer Systems Administrators**](https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm) | Computer networks are critical parts of almost every organization. Network and computer systems administrators are responsible for the day-to-day operation of these networks. | Bachelor's degree | $79,700 |
| [Software developers](https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm) | [**Software Developers**](https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm) | Software developers are the creative minds behind computer programs. Some develop the applications that allow people to do specific tasks on a computer or another device. Others develop the underlying systems that run the devices or that control networks. | Bachelor's degree | $102,280 |
| [Web developers](https://www.bls.gov/ooh/computer-and-information-technology/web-developers.htm) | [**Web Developers**](https://www.bls.gov/ooh/computer-and-information-technology/web-developers.htm) | Web developers design and create websites. They are responsible for the look of the site. They are also responsible for the site’s technical aspects, such as its performance and capacity, which are measures of a website’s speed and how much traffic the site can handle. In addition, web developers may create content for the site. | Associate's degree | $66,130 |

**Contacts for More Information**

For more information about computer careers, visit

[Association for Computing Machinery](http://www.acm.org/)

[IEEE Computer Society](http://www.computer.org/)

[Computing Research Association](http://www.cra.org/)

For information about opportunities for women pursuing information technology careers, visit

[National Center for Women & Information Technology](http://www.ncwit.org/)

**O\*NET**

[Information Security Analysts](http://www.onetonline.org/link/summary/15-1122.00)

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[www.bls.gov/ooh](https://www.bls.gov/ooh/home.htm) | Telephone: 1-202-691-5700 | [Contact OOH](https://data.bls.gov/ooh/about/ooh-faqs.htm)