

Cyber Security Occupations in San Diego County

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Currently, there is only one occupation in the standard occupational classification (SOC) system related to cyber security:

15-1122.00 - Information Security Analysts

Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses.

Sample of reported job titles: Computer Security Specialist, Computer Specialist, Data Security Administrator, Information Security Analyst, Information Security Manager, Information Security Officer, Information Security Specialist, Information Systems Security Analyst, Information Technology Security Analyst, Information Technology Specialist

In 2016, there were 817 Information Security Analyst jobs in San Diego County. Looking forward to 2021, the labor market demand for information security analysts in the county is projected to grow by 10 percent (growth of 82 jobs). There will be 56 open positions due to retirements or other replacement factors in the next five years. The hourly wages for this occupation range from \$35.15 to \$62.68. Typically, employers prefer information security analysts to have a minimum of a Bachelor's degree for entry-level jobs.

Table 1. Employment Outlook for Information Security Analysts¹

SOC	Occupation	2016 Jobs	2021 Jobs	5-Yr Change	5-Yr % Change	5-year Openings	Annual Openings	Median Hourly Earnings
15-1122	Information Security Analyst	817	899	82	10%	138	28	\$46.32

In addition to information security analysts, several other occupations incorporate cyber security skill-sets.² These additional occupations also require a Bachelor's degree for employment (Table 2). With the occupations below as well as the information security analysts, there were 24,694 cyber security-related occupations in San Diego County in 2016 with a projected 7 percent 5-year growth (1,834 jobs).

Table 2. Employment Outlook for Other Cyber Security-related Occupations

SOC	Occupation	2016 Jobs	2021 Jobs	5-Yr Change	5-Yr % Change	5-year Openings	Annual Openings	Median Hourly Earnings
15-1132	Software Developers, Applications	10,025	10,723	698	7%	1,448	290	\$49.04
15-1199	Computer Occupations, all Other*	3,364	3,498	134	4%	357	71	\$45.28
15-1143	Computer Network Architects	1,167	1,280	113	10%	193	39	\$48.28
15-1142	Network and Computer Systems Administrators	3,703	3,903	200	5%	447	89	\$38.93
15-1121	Computer Systems Analysts	5,618	6,225	607	11%	994	199	\$44.53
	Total	23,877	25,629	1,752	7%	3,439	688	\$45.84

*Computer Occupations, all Other include: Computer Systems Engineers/Architects, Web Administrators, Database Architects, Data Warehousing Specialists, Information Technology Project Managers, and more.

¹ Source: EMSI

² Cyber Security occupations were identified through keyword searches in Labor Insight/Jobs (Burning Glass)

Job Postings

To identify job postings related to cyber security specialty areas, the following keywords were used: Cyber Security Analyst, Cyber Security Ethical Hacking, and Cyber Security Computer Forensics.

In 2016, there were 409 job postings related to cyber security in San Diego County. Table 3 shows the number of job postings associated with each specific specialty area. There were also 2,264 total job postings associated with the cyber security keyword search.

Table 3. Cyber Security Job Postings (San Diego County)

Occupation	2016 Job Postings
Cyber Security: Analyst	338
Cyber Security: Ethical Hacking	12
Cyber Security: Computer Forensics	59

The most common job title in the employer job postings was Systems Engineer (122 job postings). Table 4 breaks down the top job titles for each keyword phrase.

Table 4. Top Job Titles (San Diego County)

2016 Job Postings: Analyst		2016 Job Postings: Ethical Hacking		2016 Job Postings: Computer Forensics	
Title	#	Title	#	Title	#
Security Analyst	52	Linux Instructor	3	Cyber Security Specialist	13
Systems Analyst	31	Systems Engineer	2	Security Engineer	9
Information Security Analyst	19	Software Development Engineer	2	Security Analyst	8
Information Assurance Analyst	13	Security Engineer	2	Cyber Incident/Forensics Analyst	3
Data Architect	10	Cybersecurity Engineer	1	Incident Response Consultant	3

Most frequently sought skills included information assurance, systems engineering and LINUX. Most frequently sought certifications were a security clearance, CISSP, and Security+. Table 5 provides the list the top skills and certifications that appeared to be frequently listed in the job advertisements for all cyber security jobs.

Table 5. Top Skills & Certifications for Cyber Security Occupations (San Diego County)

Skill	2016 Job Postings	Certification	2016 Job Postings
Information Assurance	466	Security Clearance	1,060
Systems Engineering	456	Certified Information Systems Security Professional (CISSP)	416
LINUX	440	Security+	278
Software Development	406	Cisco Certified Network Associate	175
Information Security	374	SANS/GIAC Certification	138

Additional skills specifically listed for information security analysts include information systems, network security, scanners, cryptography, UNIX, Transmission Control Protocol/Internet Protocol (TCP/IP), system administration, JAVA, Cisco, Project Management, host based security systems, system/network configuration, routers, Python, and security operations.

Approximately 22 percent of job advertisements studied did not list a degree level. Of those postings that list the requirement, 17 percent are looking for cyber security professionals who have a high school diploma (or equivalent), some vocational school education, or an associate degree.

Table 6. Education Requirements (San Diego County)

Education (minimum advertised)	2016 Job Postings
High school or vocational training	254
Associate Degree	45
Bachelor's Degree or higher	1,476

Industry Information

Cyber security jobs are found in customer computer programming services and computer systems design services.

Table 7. Inverse Staffing Patterns for Cyber Security Occupations (San Diego County)

Industry	Occupation Group Jobs in Industry (2016)	% of Occupation Group in Industry (2016)
Customer Computer Programming Services	3,191	13.4%
Computer Systems Design Services	2,058	8.6%
Federal Government, Civilian, Excluding Postal Service	1,649	6.9%
Corporate Subsidiary and Regional Managing Offices	1,344	5.6%

The top job postings for cyber security come from the Aerospace industry in San Diego County (185 postings).

Table 8. Top Industries Posting Jobs (San Diego County)

Industry (4-digit NAICS)	2016 Job Postings
Aerospace Product and Parts Manufacturing (3364)	185
Computer Systems Design and Related Services (5415)	126
Architectural, Engineering and Related Services (5413)	112
Navigational, Measuring, Electromedical and Control Instruments Manufacturing (3345)	98

Top employers posting the most number of job advertisements for cyber security jobs are US Defense Department contractors such as Northrop Grumman and Raytheon.

Table 6. Top Employers Posting Jobs (San Diego County)

Employer	2016 Job Postings
Northrop Grumman	184
Raytheon	79
Solute	52
Serco	49
Engility Corporation	44
Booz Allen Hamilton, Inc	43