



Labor Market Analysis for Program Recommendation Information Security and Cloud Computing Occupations Cabrillo College

Prepared by the Bay Region Center of Excellence for Labor Market Research

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Recommendation

Based on all available data, there appears to be an “undersupply” of Information Security workers compared to the demand for this cluster of occupations in the Bay Region and in the SC-Monterey Sub-Region (Monterey, San Benito, Santa Cruz counties). There is a projected annual gap of about 1,891 students in the Bay Region and 35 students in the SC-Monterey Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0708.00 - Computer Infrastructure and Support programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Cabrillo College and in the region.

This report profiles Information Security Occupations in the 12 county Bay Region and in the SC-Monterey Sub-Region for program recommendation at Cabrillo College.

- **Information Security Analysts (15-1212):** Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. Assess system vulnerabilities for security risks and propose and implement risk mitigation strategies. 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.
 - Typical Entry-Level Educational: Bachelor’s degree
 - Typical On-the-Job Training: None
 - Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 26%
- **Computer Network Support Specialists (15-1231):** Analyze, test, troubleshoot, and evaluate existing network systems, such as local area networks (LAN), wide area networks (WAN), cloud networks, servers, and other data communications networks. Perform network maintenance to ensure networks operate correctly with minimal interruption.
 - Typical Entry-Level Educational: Associate’s degree
 - Typical On-the-Job Training: None
 - Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 39%
- **Network and Computer Systems Administrators (15-1244):** Install, configure, and maintain an organization’s local area network (LAN), wide area network (WAN), data communications network, operating systems, and physical and virtual servers. Perform system monitoring and verify the integrity and availability of hardware,

network, and server resources and systems. Review system and application logs and verify completion of scheduled jobs, including system backups. Analyze network and server resource consumption and control user access. Install and upgrade software and maintain software licenses. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software.

Typical Entry-Level Educational: Bachelor’s degree

Typical On-the-Job Training: None

Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 37%

Occupational Demand

Table 1. Employment Outlook for Information Security Occupations in the Bay Region

Occupation	2023 Jobs	2028 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Wage	Median Hourly Wage
Information Security Analysts	7,582	9,158	1,577	21%	4,021	804	\$60	\$77
Computer Network Support Specialists	3,949	4,515	566	14%	1,970	394	\$33	\$42
Network and Computer Systems Administrators	9,758	10,609	851	9%	3,676	735	\$46	\$60
Total	21,289	24,282	2,993	14%	9,667	1,933	\$49	\$63

Source: Lightcast 2024.3

The Bay Region includes: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Information Security Occupations in the SC-Monterey Sub-Region

Occupation	2023 Jobs	2028 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Wage	Median Hourly Wage
Information Security Analysts	147	170	23	16%	70	14	\$45	\$61
Computer Network Support Specialists	136	144	9	6%	55	11	\$29	\$35
Network and Computer Systems Administrators	300	313	13	4%	99	20	\$37	\$49
Total	583	627	44	8%	224	45	\$37	\$49

Source: Lightcast 2024.3

SC-Monterey Sub-Region includes: Monterey, San Benito, Santa Cruz Counties

Job Postings in the Bay Region and SC-Monterey Sub-Region

Table 3. Number of Job Postings by Occupation for the latest 12 months

Occupation	Bay Region	SC-Monterey
Network and Computer Systems Administrators	1,920	57
Information Security Analysts	1,015	59
Computer Network Support Specialists	195	7

Source: Lightcast 2025.1; “Job Posting Analytics.” Feb. 2024 - Jan. 2025

Table 4a. Top Job Titles in Job Postings for Information Security Occupations in the Bay Region

Title	Bay	Title	Bay
Systems Administrators	238	Jira Administrators	36
Network Administrators	104	Network Technicians	36
Linux System Administrators	82	Embedded Linux Software Engineers	35
Information Security Analysts	68	Windows Administrators	33
Linux Administrators	57	Linux Kernel Engineers	30
IT Administrators	50	Linux Engineers	28
Cybersecurity Analysts	44	Linux Systems Engineers	28
Linux Software Engineers	41	Cybersecurity Incident Response Analysts	23
IT Systems Administrators	40	IT Auditors	23

Source: Lightcast 2025.1; "Job Posting Analytics." Feb. 2024 - Jan. 2025

Table 4b. Top Job Titles in Job Posting for Information Security Occupations in the SC-Monterey Sub-Region

Title	SC-Monterey	Title	SC-Monterey
Cybersecurity Incident Response Analysts	10	Network Administrators	4
Systems Administrators	10	Network Technicians	4
Auditors	6	Home Health Travel Registered Nurses	3
IT Administrators	6	Information Security Analysts	3
IT Systems Administrators	5	Travel Occupational Therapists	3
Information Security Specialists	5	Windows Administrators	3
Cybersecurity Analysts	4	Cyber Analysts	2
Incident Handlers	4	HPC Systems Administrators	2
Information Systems Security Officers	4	High Performance Computing Engineers	2

Source: Lightcast 2025.1; "Job Posting Analytics." Feb. 2024 - Jan. 2025

Industry Concentration

Table 5. Industries Hiring for Information Security Occupations in the Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2023)	Jobs in Industry (2028)	% Change (2023-28)	% Occupation Group in Industry (2023)
Custom Computer Programming Services	3,985	4,543	14%	18%
Computer Systems Design Services	1,714	1,947	14%	9%

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2023)	Jobs in Industry (2028)	% Change (2023-28)	% Occupation Group in Industry (2023)
Data Processing, Hosting, and Related Services	1,262	1,541	22%	6%
Corporate, Subsidiary, and Regional Managing Offices	830	1,327	60%	6%
Software Publishers	1,026	1,086	6%	5%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	759	884	17%	4%
Local Government, Excluding Education and Hospitals	669	711	6%	3%
Web Search Portals and All Other Information Services	579	640	11%	3%
Research and Development in Biotechnology (except Nanobiotechnology)	473	560	18%	2%
Colleges, Universities, and Professional Schools (State Government)	422	421	0%	2%

Source: Lightcast 2025.1

Table 6. Top Employers Posting Information Security Occupations in the Bay Region and the SC-Monterey Sub-Region

Employer	Bay	Employer	SC-Monterey
Aya Healthcare	77	Arctic Slope Regional Corporation	9
Robert Half	37	Aya Healthcare	9
Canonical Group	31	Joby Aviation	8
Diverse Lynx	31	Booz Allen Hamilton	7
Motion Recruitment	27	Montage Health	7
Palo Alto Networks	27	GPAC	6

Source: Lightcast 2025.1; "Job Posting Analytics." Feb. 2024 - Jan. 2025

Educational Supply

There are four community colleges in the Bay Region issuing 30 awards on average annually (last 3 years ending 2021-23) on TOP 0708.00 - Computer Infrastructure and Support. In the SC-Monterey Sub-Region, there is one community college that issued 10 awards on average annually (last 3 years) on this TOP code.

There is one other CTE educational institution in the Bay Region issuing 12 awards on average annually (last 3 years ending 2020-22) on CIP 11.1001- Network and System Administration/Administrator. There are no other CTE educational institution in the SC-Monterey Sub-Region issuing awards on average annually (last 3 years) on this CIP code.

Table 7a. Community College Awards on TOP 0708.00 - Computer Infrastructure and Support in the Bay Region

College	Subregion	Associate Degree	Low unit Certificate	Noncredit award	Total
Cabrillo	SC-Monterey	1	0	9	10
Foothill	Silicon Valley	0	4	0	4
Los Medanos	East Bay	8	1	0	9
San Francisco	Mid-Peninsula	0	7	0	7
Total	-	9	12	9	30

Source: Data Mart

Note: The annual average for awards is 2020-21 to 2022-23.

Table 7b. Other CTE Institutions Awards on CIP 11.1001- Network and System Administration/Administrator. in the Bay Region

College	Subregion	Associate degree
Empire College	North Bay	12
Total	-	12

Source: Data Mart

Note: The annual average for awards is 2019-20 to 2021-22.

Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay Region with 1,933 annual openings for the Information Security occupational cluster and 42 annual (3-year average) awards for an annual undersupply of 1,891 students. In the SC-Monterey Sub-Region, there is also a gap with 45 annual openings and 10 annual (3-year average) awards for an annual undersupply of 35 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0708.00 - Computer Infrastructure and Support

Metric Outcomes	Bay All CTE Program	Cabrillo College All CTE Program	State 0708.00	Bay 0708.00	SC-Monterey 0708.00	Cabrillo College 0708.00
Students with a Job Closely Related to Their Field of Study	74%	80%	71%	71%	71%	71%
Median Annual Earnings for SWP Exiting Students	\$53,090	\$46,381	\$52,790	\$65,192	\$54,475	\$54,475
Median Change in Earnings for SWP Exiting Students	24%	23%	17%	16%	10%	10%
Exiting Students Who Attained the Living Wage	54%	44%	64%	61%	51%	51%

Source: Launchboard Strong Workforce Program Median of 2018 to 2021.

Skills and Education

Table 9. Top Skills in Job Postings for Information Security Occupations in the Bay Region

Skill	Posting	Skill	Posting
Linux	911	Incident Response	350
Computer Science	886	Vulnerability	348
Operating Systems	665	Technical Support	326
Automation	613	Active Directory	299
Scripting	585	Microsoft Azure	295
Python (Programming Language)	571	TCP/IP	292
System Administration	486	Workflow Management	288
Cyber Security	475	Project Management	286
Auditing	442	Amazon Web Services	267
Firewall	376	Unix	252

Source: Lightcast 2025.1; "Job Posting Analytics." Feb. 2024 - Jan. 2025

Table 10. Education Requirements for Information Security Occupations in the Bay Region

Education Level	Job Postings	% of Total
High school or GED	190	8%
Associate degree	173	8%
Bachelor's degree & higher	1,900	84%

Source: Lightcast 2025.1; "Job Posting Analytics." Feb. 2024 - Jan. 2025

Note: 46% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCCO Data Mart and CTE Launchboard.

Sources

O*Net Online

Lightcast

CTE LaunchBoard www.calpassplus.org

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

CCCO Data Mart

Contacts

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