



## Computer Networking (TOP 0708.10)

November 2023

Prepared by the South Central Coast Center of Excellence for  
Labor Market Research

---

### Program Recommendation

This report was compiled by the South Central Coast<sup>1</sup> Center of Excellence to provide regional labor market data for the program recommendation – Computer Networking. This report can help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

### Key Findings

- In the South Central Coast region, **the number of jobs related to Computer Networking are expected to increase** for Database Administrators and **remain steady** for Computer Network Architects, Database Architects, and Network and Computer Systems Administrators.
- Computer Networking is anticipated to experience a **low risk of automation** for all four related occupations.
- In 2021 there were 307 regional completions in programs related to the occupations identified as aligned with Computer Networking and 279 openings, indicating **supply is meeting demand**.
- Typical entry-level education is **a bachelor's degree** for all four occupations.
- Completers of Computer Networking programs from the 2019-2020 academic year in the South Central Coast region had a **median annual wage upon completion of \$44,148**.
- 59% of students are **employed within a year** after completing a program.
- 54% of students **attained a living wage** within a year of completion.
- Completers experienced an average of **+21% change in earnings after exiting**.
- 70% of students were **part-time**, 11% **skill builders**, 38% **first-generation**, and 77% **economically disadvantaged**.

---

<sup>1</sup> The South Central Coast Region consists of San Luis Obispo County, Santa Barbara County, Ventura County, and the following cities from North Los Angeles County: Canyon Country, Castaic, Lake Hughes, Lancaster, Littlerock, Llano, Newhall, Palmdale, Pearblossom, Santa Clarita, Stevenson Ranch, and Valencia.

## Occupation Codes and Descriptions

There are four occupations in the standard occupational classification (SOC) system that were identified as related to Computer Networking for this analysis. The occupation titles and descriptions, as well as reported job titles, are included in Exhibit 1.

**Exhibit 1 – Occupation, Description, and Sample Job Titles**

<b>SOC Code</b>	<b>Title</b>	<b>Description</b>	<b>Sample of Reported Job Titles</b>
15-1241	<b>Computer Network Architects</b>	Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. Perform network modeling, analysis, and planning, including analysis of capacity needs for network infrastructures. May also design network and computer security measures. May research and recommend network and data communications hardware and software.	Design Engineer, Network Analyst, Network and Security Engineer, Network Consultant, Network Systems Consultant, Networking Systems and Distribution Systems Engineer, Solutions Architect, Telecommunications Analyst
15-1242	<b>Database Administrators</b>	Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. Identify, investigate, and resolve database performance issues, database capacity, and database scalability. May plan, coordinate, and implement security measures to safeguard computer databases.	Database Administration Manager, Database Administrator (DBA), Database Analyst, Database Coordinator, Database Engineer, Database Manager, Development and Database Administration Manager, Information Systems Administrator (IS Admin), Information Systems Manager (IS Manager), Systems Administrator
15-1243	<b>Database Architects</b>	Design strategies for enterprise databases, data warehouse systems, and multidimensional networks. Set standards for database operations, programming, query processes, and security. Model, design, and construct large relational databases or data warehouses. Create and optimize data models for warehouse infrastructure and workflow. Integrate new systems with existing warehouse structure and refine system performance and functionality.	Data Architect, Data Engineer, Data Officer, Database Analyst, Database Architect, Database Consultant, Database Developer, Database Programmer, Enterprise Architect, Information Architect

SOC Code	Title	Description	Sample of Reported Job Titles
15-1244	<b>Network and Computer Systems Administrators</b>	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.	Information Analyst, Information Systems Manager (IS Manager), Information Technology Specialist (IT Specialist), Local Area Network Specialist (LAN Specialist), Local Area Network Administrator (LAN Administrator), Network Administrator, Network Coordinator, Network Manager, Systems Administrator

Source: O\*NET Online

### Current and Future Employment

In the South Central Coast region, the number of jobs related to Computer Networking are expected to increase for Database Administrators and remain steady for Computer Network Architects, Database Architects, and Network and Computer Systems Administrators.

#### Exhibit 2 – Five-Year Projections for Computer Networking in the South Central Coast Region

SOC	Occupation	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change
15-1241	<b>Computer Network Architects</b>	633	639	6	1%
15-1242	<b>Database Administrators</b>	302	319	17	6%
15-1243	<b>Database Architects</b>	156	161	5	3%
15-1244	<b>Network and Computer Systems Administrators</b>	1,256	1,294	38	3%

Source: Lightcast™ Analyst 2022

## Earnings

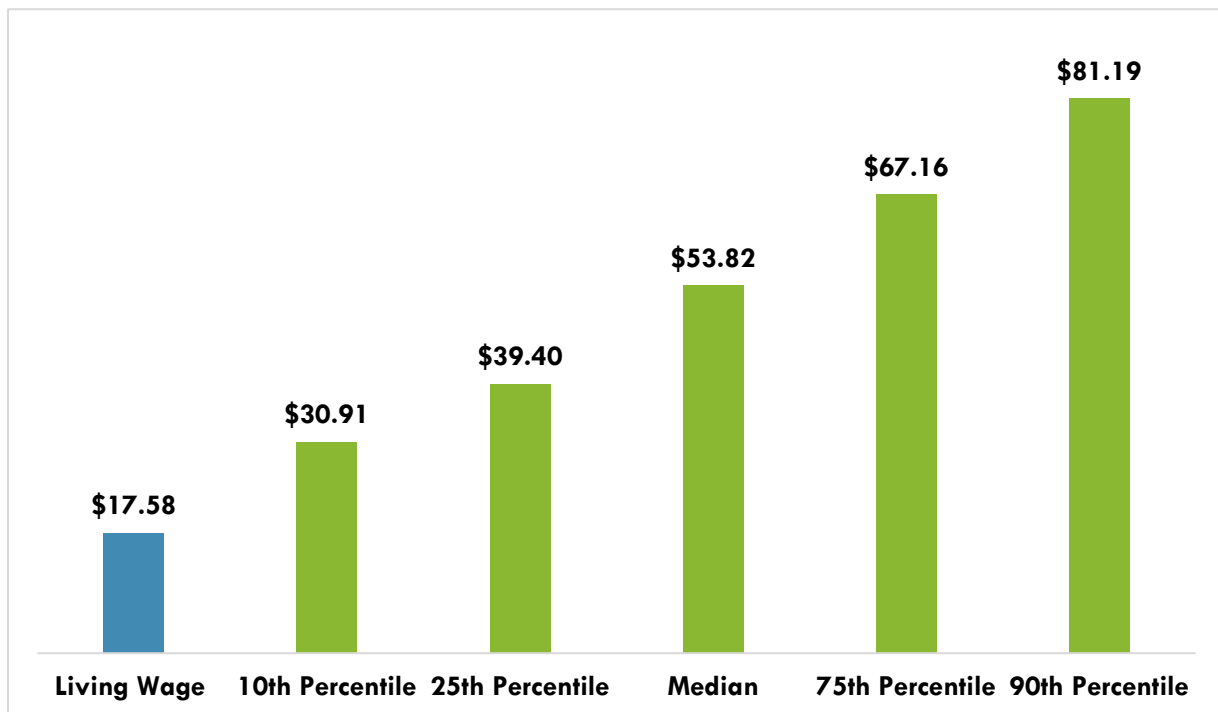
Exhibit 3 contains hourly wages and annual average earnings for these occupations. Entry-level hourly earnings are represented by the 25<sup>th</sup> percentile of wages, median hourly earnings are represented by the 50<sup>th</sup> percentile of wages, and experienced hourly earnings are represented by the 75<sup>th</sup> percentile of wages, demonstrating various levels of employment.

**Exhibit 3 – Earnings for Computer Networking in the South Central Coast Region**

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings
15-1241	Computer Network Architects	\$38.20	\$50.90	\$67.34
15-1242	Database Administrators	\$33.76	\$49.05	\$64.72
15-1243	Database Architects	\$50.80	\$68.43	\$78.53
15-1244	Network and Computer Systems Administrators	\$34.86	\$46.90	\$58.05

Source: Lightcast™ Analyst 2022

**Exhibit 3b – Earnings for Computer Networking in the South Central Coast Region**



Source: Family Needs Calculator (Living wage is based on Single Adult households with no children); Lightcast™ Analyst 2022

## Employer Job Postings

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is looking for professionals in a given field, and what they are looking for in potential candidates. To identify job postings related to Computer Networking the following standard occupational classifications were used:

15-1241	Computer Network Architects
15-1242	Database Administrators
15-1243	Database Architects
15-1244	Network and Computer Systems Administrators

---

## Top Occupations

In 2022, there were 1,839 employer postings for the occupations related to Computer Networking.

**Exhibit 4 – Top Occupations by Job Postings**

<b>SOC Code</b>	<b>Occupation</b>	<b>Job Postings, Full Year 2022</b>
15-1244	<b>Network and Computer Systems Administrators</b>	735
15-1241	<b>Computer Network Architects</b>	442
15-1242	<b>Database Administrators</b>	441
15-1243	<b>Database Architects</b>	221

Source: Lightcast™ Analyst 2022

**Exhibit 4b – Top Occupations and Risk of Automation**

<b>SOC Code</b>	<b>Occupation</b>	<b>Risk of Automation</b>
15-1244	<b>Network and Computer Systems Administrators</b>	Low
15-1241	<b>Computer Network Architects</b>	Low
15-1242	<b>Database Administrators</b>	Low
15-1243	<b>Database Architects</b>	Low

Source: Lightcast™ Analyst 2022

## Top Titles

The top job titles for employers posting ads for jobs related to Computer Networking are listed in Exhibit 5. Systems Administrators is mentioned as the job title in 16% of all relevant job postings (167 postings).

**Exhibit 5 – Job Titles**

<b>Title</b>	<b>Job Postings, Full Year 2022</b>
Systems Administrators	167
Network Engineers	95
Data Engineers	74
Network Administrators	60
Automation Engineers	58

Source: Lightcast™ Analyst 2022

## Top Employers

Exhibit 6 lists the major employers hiring professionals in the Computer Networking field. The top employer posting job ads was Amgen. The top worksite cities for these occupations were Thousand Oaks, Santa Barbara, Lompoc, Santa Clarita, and Oxnard.

**Exhibit 6 – Top Employers (n=945)**

<b>Employer</b>	<b>Job Postings, Full Year 2022</b>
Amgen	128
Elevance Health	78
Northrop Grumman	43
VirtualVocations	34
By Light Professional IT Services	33

Source: Lightcast™ Analyst 2022

## Skills

The tables in Exhibit 7 list employers' most commonly requested skills in job postings related to Computer Networking. Computer Science is the most sought-after specialized skill for employers, followed by SQL and Automation. Communications, Management, and Troubleshooting were the most requested baseline skills. SQL, Amazon Web Services, and Operating Systems were the most commonly requested software and programming skills.

**Exhibit 7 – Specialized Skills (n= 8,011)**

Skills	Job Postings, Full Year 2022
Computer Science	472
SQL (Programming Language)	361
Automation	324
Project Management	278
Amazon Web Services	251
Operating Systems	246
Python (Programming Language)	240
Firewall	219
Linux	214
Microsoft Azure	202
Information Systems	191
Local Area Networks	185
Scripting	184
System Administration	183
Agile Methodology	182

Source: Lightcast™ Analyst 2022

**Exhibit 7b – Baseline Skills (n= 8,877)**

<b>Skills</b>	<b>Job Postings, Full Year 2022</b>
Communications	814
Management	632
Troubleshooting (Problem Solving)	600
Operations	577
Problem Solving	408
Customer Service	340
Leadership	324
Information Technology	310
Planning	282
Writing	248

Source: Lightcast™ Analyst 2022

**Exhibit 7c – Software and Programming Skills (n= 5,351)**

<b>Skills</b>	<b>Job Postings, Full Year 2022</b>
SQL (Programming Language)	368
Amazon Web Services	252
Operating Systems	251
Python (Programming Language)	246
Firewall	222
Linux	219
Microsoft Azure	206
Microsoft Excel	200
Windows Servers	185
Active Directory	170

Source: Lightcast™ Analyst 2022



### Industry Concentration

Exhibit 8 shows the industries with the most Computer Networking postings in the South Central Coast region. Note: 16% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

**Exhibit 8 – Industries Employing the Most in the Computer Networking Field, 2022**

Industry	Occupation Group Jobs in Industry	% of Occupation Group in Industry
Professional, Scientific, and Technical Services	449	29%
Manufacturing	361	24%
Administrative and Support and Waste Management and Remediation Services	191	12%
Finance and Insurance	99	6%
Health Care and Social Assistance	78	5%

Source: Lightcast™ Analyst 2022

### Certifications

Exhibit 9 lists the most in-demand certifications in the Computer Networking field. The top requested certification in job postings was Secret Clearance.

**Exhibit 9 – Certifications (n= 1,550)**

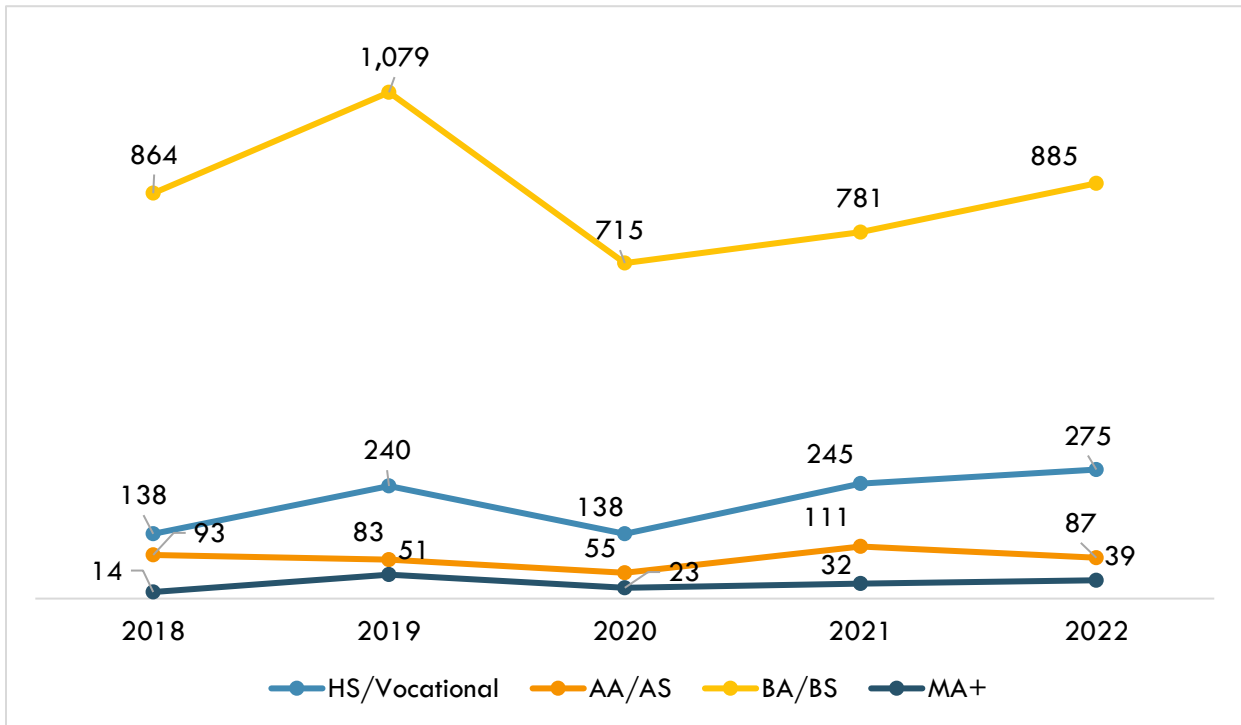
Certifications	Job Postings, Full Year 2022
Secret Clearance	154
CompTIA Security+	134
Valid Driver's License	133
Security Clearance	129
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	92

Source: Lightcast™ Analyst 2022

### Job Postings - Minimum Educational Attainment Over Time

Exhibit 10 displays the change in job advertisements over the last five years for Computer Networking, according to the minimum advertised education. In 2022, there were 1,286 total job ads posted with a minimum advertised education, with 885 of them requiring a bachelor’s degree.

**Exhibit 10 – Educational Demand, Minimum Advertised**



Source: Lightcast™ Analyst 2022

### Job Postings – Proportion of Job Postings by Minimum Educational Attainment Required

To gauge employer preference for candidates with particular education levels, the proportion of job postings by minimum advertised education appears in Exhibit 11. Employers posting job ads for Computer Networking have frequently sought candidates with a bachelor’s degree.

**Exhibit 11 – Occupational Demand by Education, Minimum Advertised**

Minimum Education Requirement	2018	2019	2020	2021	2022
<b>HS Diploma / Vocational Training</b>	12%	17%	15%	21%	21%
<b>Associate Degree</b>	8%	6%	6%	9%	7%
<b>Bachelor’s Degree</b>	78%	74%	77%	67%	69%
<b>Graduate Degree</b>	1%	4%	2%	3%	3%

Source: Lightcast™ Analyst 2022

## Education and Training

Exhibit 12 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training needed to attain competency in the occupation.

**Exhibit 12 – Education and Training Requirements**

SOC	Occupation	Typical entry-level education	Typical on-the-job training
15-1241	<b>Computer Network Architects</b>	Bachelor's degree	None
15-1242	<b>Database Administrators</b>	Bachelor's degree	None
15-1243	<b>Database Architects</b>	Bachelor's degree	None
15-1244	<b>Network and Computer Systems Administrators</b>	Bachelor's degree	None

Source: Bureau of Labor Statistics Employment Projections (Educational Attainment)

## Regional Completions and Openings

There were 307 regional completions (2021) and 279 regional openings (2021) in the South Central Coast region aligned with programs related to the occupations in this report.

**Exhibit 13 – Completions and Openings**

<b>20</b> Regional Institutions had Related Programs (2021)	<b>307</b> Regional Completions (2021)	<b>279</b> Annual Openings (2021)
--	---	--------------------------------------

Source: Lightcast™ Analyst 2022

## Related Programs

CIP Code	Program	Completions (2021)
11.1003	Computer and Information Systems Security/Auditing/Information Assurance	132
11.0103	Information Technology	89
11.0901	Computer Systems Networking and Telecommunications	61
11.0101	Computer and Information Sciences, General	17
11.1001	Network and System Administration/Administrator	6
11.0899	Computer Software and Media Applications, Other	2

Source: Lightcast™ Analyst 2022

## CCC and Non-CCC Awards

Exhibit 14 lists the number of completers from programs related to Computer Networking in the South Central Coast region.

**Exhibit 14 – CCC and Non-CCC Awards the South Central Coast, 2021**

<b>CCC Programs</b>		<b>Completers</b>
Moorpark College		94
Cuesta College		46
Allan Hancock College		29
Oxnard College		28
Santa Barbara City College		20
Antelope Valley College		14
College of the Canyons		9
Ventura College		0
<b>Non-CCC Programs</b>		<b>Completers</b>
California Lutheran University		26
California State University-Channel Islands		18
Westmont College		10
Ventura Adult and Continuing Education		6
The Master's University and Seminary		5
California Institute of the Arts		2
Charter College-Canyon Country		0
Academy Education Services		0
Conejo Valley Adult Education		0
Laurus College		0
ITT Technical Institute-Oxnard		0
Santa Barbara Business College-Santa Maria		0

Source: Lightcast™ Analyst 2022

## Student Outcomes

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the regional Computer Networking Programs (TOP: 0708.10) for the 2019-2020 academic year.

- Completers of Computer Networking programs from the 2019-2020 academic year in the South Central Coast region had a **median annual wage upon completion of \$44,148**.
- 59% of students are **employed within a year** after completing a program.
- 54% of students **attained a living wage** within a year of completion.
- Completers experienced an average of +21% **change in earnings after exiting**.
- 70% of students were **part-time**, 11% **skill builders**, 38% **first-generation**, and 77% **economically disadvantaged**.

## Sources

O\*Net Online, Lightcast™ Analyst 2022, MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard, Statewide CTE Outcomes Survey, Employment Development Department Unemployment Insurance Dataset

## Notes

Data included in this analysis represent the labor market demand for relevant positions most closely related to Computer Networking. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions. All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.