

## Memorandum

To: Kaina Abdelaziz, Assistant Professor, Sacramento City College

From: Ebony J. Benzing, Research Manager, North/Far North Center of Excellence

Date: Monday, September 21, 2020

Re: Program Placement Council LMI Sacramento City Cloud Computing certificate program

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## Background

Sacramento City College contacted COE regarding labor market information to submit a program to the Program Placement Council (PPC) for endorsement, which is now part of getting approval to move forward in career education program development. This process is intended to encourage investments in programs that lead to gainful employment for our students while placing labor market information at the forefront of the decision-making process.

This memo uses the Strong Workforce Program labor market information template (exhibit 1), developed by the Los Rios Community College District, to provide a summary of occupational demand and educational program supply. The findings below summarize the data analysis shown in exhibit 1.

## Findings

- Postsecondary training providers in the North (Greater Sacramento) region, including community colleges, conferred an average of 179 certificates and degrees per year related to TOP codes and aligned CIP code programs.<sup>1</sup>
- There are 1,276 projected annual openings over the next five years across seven cloud computing-related occupations.<sup>2</sup> Please see Appendix A for descriptions of selected occupations.
- While most of the selected occupations typically require a bachelor's degree for entry-level work, many occupations are classified as middle-skill jobs suggesting that there may be alternate paths to employment without a four-year degree.<sup>3</sup> Community colleges should ensure that cloud computing programs connect students to employment and transfer opportunities to four-year colleges.
- A variety of other TOP and CIP programs train for these occupations. While not included as a factor in the reported supply data, analysis of these awards show that there still is a gap, even when accounting for these awards. This gap suggests the need for additional training related to the studied occupations.
- Anecdotal evidence from external research points to the importance of digital skills training. An April 2020 report from Toolbox estimates cloud security to be one of the fastest-growing cybersecurity skills over the next five years.<sup>4</sup> The report also shows that the global cybersecurity workforce needs to grow by 145%.<sup>5</sup>

Please contact Ebony Benzing, COE Research Manager, for further information at [Ebony.Benzing@losrios.edu](mailto:Ebony.Benzing@losrios.edu) or 916-563-3215.

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<sup>1</sup> COE Supply Tables, California Community Colleges Chancellor's Office DataMart, and Integrated Postsecondary Education Data System (IPEDS).

<sup>2</sup> Emsi 2020.2; QCEW Employees, Non-QCEW Employees and Self-Employed.

<sup>3</sup> U.S. Department of Labor, Bureau of Labor Statistics, Educational attainment for workers 25 years and older by detailed occupation, 2018, <https://www.bls.gov/emp/tables/educational-attainment.htm>

<sup>4</sup> Prajakta Hebbar, "Top 10 In-Demand Cybersecurity Jobs in the Age of Coronavirus," Toolbox, April 21, 2020,

<https://www.toolbox.com/security/security-careers-skills/articles/top-in-demand-cybersecurity-jobs-amid-pandemic/>

<sup>5</sup> Ibid.

**Exhibit 1. Labor market demand for cloud computing in the North (Greater Sacramento) region**

Top6	Top6_Title	SOC Code	SOC Title	Skill Category	Typical Education
0708.00	Computer Infrastructure and Support	11-3021	Computer and Information Systems	Above Middle Skill	Bachelor's degree
0708.10	Computer Networking	15-1122	Information Security Analysts	Above Middle Skill	Bachelor's degree
		15-1142	Network and Computer Systems Administrators	Middle Skill	Bachelor's degree
		15-1143	Computer Network Architects	Middle Skill	Bachelor's degree
		15-1151	Computer User Support Specialists	Middle Skill	Some college, no degree
		15-1152	Computer Network Support Specialists	Middle Skill	Associate's degree
		15-1199	Computer Occupations, All Other	Middle Skill	Bachelor's degree

**Geography - The program identified specifically targets the labor market need for trained workers in...**

- Select a region/subregion or a single county geography using the drop down lists embedded in the green or blue cell.

**Region/Subregion list**

- Greater Sacramento

**County list**

n/a

**Demand** - the program(s) prepare students to work in the following occupations...

**Supply** - On average, how many awards (certificates and degrees) area conferred by community colleges and other postsecondary institutions in the region/county identified?

SOC Code	Occupational Title	Annual Openings	Institution Type	# of Awards Conferred (Annual Average)
11-3021	Computer and Information Systems Managers	270	Community Colleges	179
15-1122	Information Security Analysts	33	Other Postsecondary Institutions	13
15-1142	Network and Computer Systems Administrators	149		
15-1143	Computer Network Architects	55		
15-1151	Computer User Support Specialists	377		
15-1152	Computer Network Support Specialists	101		
15-1199	Computer Occupations, All Other	290		
			<b>Summary of Data Entered:</b>	
			Demand	1,276
			Supply	192
			<b>Analysis:</b>	
			<b>It's a go! Undersupply indicated</b>	

<b>Community colleges with same TOP program:</b>		<b>Other ed programs with corresponding CIP programs:</b>	
<u>TOP6 - Top Title</u>		<u>CIP - CIP Title</u>	
<u>School</u>	<u>3-Year Annual Average Awards (2016-17 to 2018-19)</u>	<u>School</u>	<u>3-Year Annual Average Awards (2016-17 to 2018-19)</u>
0708.00 - Computer Infrastructure and Support		11.1003 - Computer and Information Systems Security/Information Assurance	
ARC	19	Asher College	2
CRC	6		
SCC	20		
Sierra	40		
0708.10 - Computer Networking			
ARC	22	11.0901 - Computer Systems Networking and Telecommunications	
CRC	7	Charles A Jones	11
SCC	39		
Sierra	25		
<b>Related programs by TOP (not included in supply):</b>		<b>Related programs by CIP (Not included in Supply):</b>	
<u>TOP6 - Top Title</u>	<u>3-Year Annual Award Avg</u>	<u>CIP6 - CIP Title</u>	<u>3-Year Annual Award Avg</u>
0702.00 - Computer Information Systems	27	11.0103 - Information Technolgy	9
0706.00 - Computer Science (Transfer)	62	11.0701 - Computer Science (BA/BS only)	597
0708.20 - Computer Support	15	11.1006 - Computer Support Specialist	104
0701.00 - Information Technology, General	7	11.0101 - Computer and Information Sciences, General	0
<b>Totals</b>	<b>111</b>	<b>Totals</b>	<b>710</b>

## Appendix A. Occupation descriptions

Occupational definitions, sample job titles, and education and training requirements.

### **Computer and Information Systems (11-3021)**

Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.

**Sample of reported job titles:** Application Development Director, Computing Services Director, Data Processing Manager, Information Systems Director (IS Director), Information Systems Manager (IS Manager), Information Systems Supervisor (IS Supervisor), Information Technology Director (IT Director), Information Technology Manager (IT Manager), MIS Director (Management Information Systems Director), Technical Services Manager

*Incumbent workers with a community college award or some postsecondary course work: 21.1%*

### **Information Security Analysts (15-1122)**

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:** Data Security Administrator, Information Security Officer, Information Security Specialist, Information Systems Security Analyst, Information Systems Security Officer (ISSO), Information Technology Security Analyst (IT Security Analyst), Information Technology Specialist, Network Security Analyst, Security Analyst, Systems Analyst

*Incumbent workers with a community college award or some postsecondary course work: 27.3%*

### **Network and Computer Systems Administrators (15-1142)**

Install, configure, and support an organization's local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Monitor network to ensure network availability to all system users and may perform necessary maintenance to support network availability. May monitor and test Web site performance to ensure Web sites operate correctly and without interruption. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software. May supervise computer user support specialists and computer network support specialists. May administer network security measures.

**Sample of reported job titles:** Information Analyst, Information Systems Manager (IS Manager), Information Technology Specialist (IT Specialist), LAN Specialist (Local Area Network Specialist), Local Area Network Administrator (LAN Administrator), Network Administrator, Network Coordinator, Network Manager, Network Specialist, Systems Administrator

*Incumbent workers with a community college award or some postsecondary course work: 39.6%*

### **Computer Network Architects (15-1143)**

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. May also design network and computer security measures. May research and recommend network and data communications hardware and software.

**Sample of reported job titles:** Design Engineer, Network Analyst, Network and Security Engineer, Network Consultant, Network Systems Consultant, Networking Systems and Distributed Systems Engineer, Solutions Architect, Telecommunications Analyst

*Incumbent workers with a community college award or some postsecondary course work: 37.2%*

### **Computer User Support Specialists (15-1151)**

Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.

**Sample of reported job titles:** Computer Specialist, Computer Support Specialist, Computer Technician, Desktop Support Technician, Help Desk Analyst, Help Desk Technician, Information Technology Specialist (IT Specialist), Network Technician, Support Specialist, Technical Support Specialist

*Incumbent workers with a community college award or some postsecondary course work: 40.7%*

### **Computer Network Support Specialists (15-1152)**

Analyze, test, troubleshoot, and evaluate existing network systems, such as local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Perform network maintenance to ensure networks operate correctly with minimal interruption.

**Sample of reported job titles:** Computer Network Specialist, IT Consultant (Information Technology Consultant), Network Engineer, Network Specialist, Network Support Specialist, Network Technical Analyst, Network Technician, Personal Computer Network Analyst, Senior IT Assistant (Senior Information Technology Assistant), Systems Specialist

*Incumbent workers with a community college award or some postsecondary course work: 40.7%*

### **Computer Occupations, All Other (15-1199)**

All computer occupations not listed separately. Relevant occupations within this group include:

**Computer Systems Engineers/Architects (15-1199.02)** - Design and develop solutions to complex applications problems, system administration issues, or network concerns. Perform systems management and integration functions.

**Information Technology Project Managers (15-1199.09)** - Plan, initiate, and manage information technology (IT) projects. Lead and guide the work of technical staff. Serve as liaison between business and technical aspects of projects. Plan project stages and assess business implications for each stage. Monitor progress to assure deadlines, standards, and cost targets are met.

**Sample of reported job titles:**

**Computer Systems Engineers/Architects (15-1199.02)** - Architect, Electronic Data Interchange System Developer (EDI System Developer), Information Technology Architect (IT Architect), Network and Infrastructure Engineer, Network Engineer, Research Systems Architect, Solution Architect, System Architect, Systems Consultant, Systems Engineer

**Information Technology Project Managers (15-1199.09)** - Cloud Product Director, Cybersecurity Project Manager, Data Center Product Director, Information Systems Project Manager (IS Project Manager), IT Developer (Information Technology Developer), IT Manager (Information Technology Manager), IT Program Manager (Information Technology Program Manager), IT Project Manager (Information Technology Project Manager), Scrum Master, Transition Program Manager

*Incumbent workers with a community college award or some postsecondary course work: 26.2%*