C·O·E CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

Program Endorsement Brief: 0708.10/Computer Networking
Networking Skills Certificate
Orange County Center of Excellence, August 2021

Summary Analysis

Program Endorsement:	Endorsed: All Criteria Met	☒	Endorsed: Some Criteria Met	☐	Not Endorsed	☐
Program Endorsement Criteria						
Supply Gap:	Yes ☑				No ☐	
Living Wage: (Entry-Level, 25th)	Yes ☑				No ☐	
Education:	Yes ☑				No ☐	
Emerging Occupation(s)						
Yes ☐					*No* ☑	

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to 4 middle-skill occupations: *Computer Network Support Specialists* (15-1231), *Computer User Support Specialists* (15-1232), *Computer Network Architects* (15-1241), and *Computer Occupations, All Other* (15-1299). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.[1] Although two occupations in this report, *Computer Network Architects* and *Computer Occupations, All Other*, typically require a bachelor's degree, they are considered middle-skill because approximately one-third of workers in the field have completed some college or an associate degree. This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data there appears to be a supply gap for these computer networking occupations in the region. Additionally, the majority of annual openings for the occupations in this report typically require either some college but no degree or an associate degree and entry-level wages exceed the living wage in both Los Angeles and Orange counties. **Therefore, due to all the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

Demand:

- *Supply Gap Criteria –* Over the next five years, there is projected to be **4,148 jobs available annually** in the region due to retirements and workers leaving the field, **which is more than the 754 awards conferred annually** by educational institutions in the region.

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[1] The COE classifies middle-skill jobs as the following:
- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

- However, the Computer Occupations, All Other (15-1299) SOC code includes a variety of emerging occupations and not solely those related to computer networking. Since this SOC code does not solely represent networking positions, *the number of annual job openings is likely overstated.*
- Over the past 12 months, there were **55,363 online job postings related to these Computer Networking occupations**. The highest number of job postings were for Data Analyst, Systems Engineer, and Network Engineer.

- *Living Wage Criteria –*Within Orange County, **all annual job openings** for these computer networking occupations have entry-level wages **above the living wage** ($17.36/hour).[2]
- *Educational Criteria –*Within the LA/OC region, **54% of the annual job openings** for occupations related to Computer Networking **typically require some college, no degree or an associate degree.**
  - Furthermore, the national-level educational attainment data indicates **between 27.2% and 39.2% of workers in the field have completed some college or an associate degree.**

Supply:
- There are **12 community colleges** in the LA/OC region that issue awards related to Computer Networking, conferring an average of **469 awards annually** between 2017 and 2020.
- Between 2016 and 2019, there was an average of **285 awards conferred annually** in related training programs by non-community college institutions.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these computer networking occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decrease by 5% through 2024. However, there will be more than 4,000 job openings per year through 2024 due to retirements and workers leaving the field.

This report includes employment projection data by Emsi which uses EDD information. Emsi's projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.

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[2] Living wage data was pulled from California Family Needs Calculator on 8/20/2021. For more information, visit the California Family Needs Calculator website: https://insightcced.org/2018-family-needs-calculator/.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties[3]

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	43,051	40,689	(2,362)	(5%)	2,858
Orange	18,718	17,956	(762)	(4%)	1,289
Total	**61,769**	**58,645**	**(3,124)**	**(5%)**	**4,148**

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these computer networking occupations in Orange County as they relate to the county's living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

Orange County: All annual openings for these computer networking occupations have entry-level wages above the living wage for one adult ($17.36 in Orange County). Typical entry-level hourly wages are in a range between $21.39 and $40.98. Experienced workers can expect to earn wages between $35.62 and $71.04, which are higher than the living wage estimate. Orange County's average wages are below the average statewide wage of $40.43 for these occupations.

Los Angeles County: All annual openings for these computer networking occupations have entry-level wages above the living wage for one adult ($15.04 in Los Angeles County). Typical entry-level hourly wages are in a range between $21.91 and $41.80. Experienced workers can expect to earn wages between $36.47 and $72.55, which are higher than the living wage estimate. Los Angeles County's average wages are below the average statewide wage of $40.43 for these occupations.

Job Postings

There were 55,363 online job postings related to Computer Networking listed in the past 12 months. The highest number of job postings were for Data Analyst, Systems Engineer, and Network Engineer. The top skills were: Project Management, SQL, and Technical Support. The top three employers, by number of job postings, in the region were: Anthem Blue Cross, Deloitte, and Raytheon.

It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.

Educational Attainment

The Bureau of Labor Statistics (BLS) lists the following typical entry-level education for these computer networking occupations:

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[3] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

- **Bachelor's degree:** *computer network architects; computer occupations, all other*
- **Associate degree:** *computer network support specialists*
- **Some college, no degree:** *computer user support specialists*

In the LA/OC region, the majority of annual job openings (56%) typically require either some college, no degree or an associate degree. Additionally, the national-level educational attainment data indicates between 27.2% and 39.2% of workers in the field have completed some college or an associate degree as their highest level of education. Of the 49% of Computer Networking job postings listing a minimum education requirement in Los Angeles/Orange County, 11% (2,868) requested high school or vocational training and 6% (1,705) requested an associate degree.

Educational Supply
Community College Supply—Exhibit 2 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Computer Infrastructure and Support (0708.00), Computer Networking (0708.10), and Computer Support (0708.20) The colleges with the most completions in the region are: Coastline and Long Beach. Over the past 12 months, there were 20 other related program recommendation requests from regional community colleges.

Exhibit 2: Regional community college awards (certificates and degrees), 2017-2020

TOP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
0708.00	Computer Infrastructure and Support	Cerritos	0	0	4	1
		Glendale	0	0	3	1
		LA City	0	0	3	1
		La Harbor	1	1	1	1
		LA Mission	0	2	12	5
		LA Valley	8	5	2	5
		Long Beach	1	3	8	4
		Mt. San Antonio	20	24	24	23
		Pasadena	0	1	1	1
		Rio Hondo	0	0	9	3
		West LA	0	4	15	6
		LA Subtotal	**30**	**40**	**82**	**51**
		Coastline	65	49	46	53
		Cypress	1	2	3	2
		Orange Coast	0	0	7	2
		OC Subtotal	**66**	**51**	**56**	**57**
	Supply Subtotal/Average		**96**	**91**	**138**	**108**
0708.10		Cerritos	8	11	9	9

TOP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
	Computer Networking	Glendale	6	3	3	4
		LA City	37	23	0	20
		LA Pierce	23	39	20	27
		Long Beach	27	55	47	43
		Mt. San Antonio	2	8	11	7
		Rio Hondo	0	5	7	4
		West LA	43	77	48	56
		LA Subtotal	**146**	**221**	**145**	**171**
		Coastline	12	38	59	36
		Cypress	37	70	95	67
		Irvine	12	11	21	15
		Saddleback	17	10	21	16
		Santa Ana	7	14	12	11
		OC Subtotal	**85**	**143**	**208**	**145**
		Supply Subtotal/Average	**231**	**364**	**153**	**316**
0708.20	Computer Support	Citrus	0	0	1	0
		Glendale	3	10	7	7
		LA Pierce	7	9	8	8
		Long Beach	1	8	14	8
		Pasadena	3	7	30	13
		LA Subtotal	**14**	**34**	**60**	**36**
		Cypress	1	3	5	3
		Santa Ana	10	9	0	6
		OC Subtotal	**11**	**12**	**5**	**9**
		Supply Subtotal/Average	**25**	**46**	**65**	**45**
		Supply Total/Average	**352**	**501**	**356**	**469**

Non-Community College Supply—For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for Computer Networking. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: (11.0901) *Computer Systems Networking and Telecommunications*, (11.1001) *Network and Systems Administration/Administrator*, and (11.1003) *Computer and Information Systems Security/Auditing/Information Assurance*. Due to different data collection periods, the most recent

three-year period of available data is from 2016 to 2019. Between 2016 and 2019, four-year colleges in the region conferred an average of 285 awards annually in related training programs.

Exhibit 3: Regional non-community college awards, 2016-2019

CIP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
11.0901	Computer Systems Networking and Telecommunications	Brand College	2	0	2	1
		DeVry University – California	150	112	88	117
		Mt Sierra College	5	4	0	3
		University of California – Irvine	17	23	14	18
		University of Phoenix – California	27	18	3	16
		University of Southern California	1	1	0	1
		Supply Subtotal/Average	**202**	**158**	**107**	**156**
11.1001	Network and System Administration/Administrator	ABCO Technology	0	13	5	6
		Brand College	2	6	23	10
		California Intercontinental University	0	1	3	1
		University of Phoenix - California	1	12	13	9
		Supply Subtotal/Average	**3**	**32**	**44**	**26**
11.1003	Computer and Information Systems Security/Auditing/Information Assurance	Azusa Pacific University	3	0	0	1
		Learnet Academy Inc	48	17	0	22
		Loyola Marymount University	0	0	0	0
		Mt Sierra College	8	13	0	7
		University of Phoenix – California	71	42	32	48
		University of Southern California	35	20	20	25
		Supply Subtotal/Average	**165**	**92**	**52**	**103**
		Supply Total/Average	**370**	**282**	**203**	**285**

Appendix A: Occupational demand and wage data by county

Exhibit 4. Orange County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Network Support Specialists (15-1231)	1,780	1,738	(42)	(2%)	126	$26.58	$32.07	$39.83
Computer User Support Specialists (15-1232)	7,863	7,799	(64)	(1%)	581	$21.39	$27.35	$35.62
Computer Network Architects (15-1241)	1,687	1,699	12	1%	103	$40.98	$56.88	$71.04
Computer Occupations, All Other (15-1299)	7,388	6,720	(668)	(9%)	479	$27.19	$38.70	$53.74
Total	**18,718**	**17,956**	**(762)**	**(4%)**	**1,289**			

Exhibit 5. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Network Support Specialists (15-1231)	4,300	4,126	(174)	(4%)	299	$26.78	$32.32	$40.09
Computer User Support Specialists (15-1232)	17,677	17,147	(530)	(3%)	1,248	$21.91	$28.02	$36.47
Computer Network Architects (15-1241)	3,676	3,506	(170)	(5%)	203	$41.80	$58.05	$72.55
Computer Occupations, All Other (15-1299)	17,399	15,910	(1,489)	(9%)	1,108	$28.13	$40.06	$55.61
Total	**43,051**	**40,689**	**(2,362)**	**(5%)**	**2,858**			

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Computer Network Support Specialists (15-1231)	6,080	5,864	(216)	(4%)	426	Associate's degree
Computer User Support Specialists (15-1232)	25,539	24,947	(592)	(2%)	1,829	Some college, no degree
Computer Network Architects (15-1241)	5,363	5,205	(158)	(3%)	305	Bachelor's degree
Computer Occupations, All Other (15-1299)	24,787	22,630	(2,157)	(9%)	1,588	Bachelor's degree
Total	**61,769**	**58,645**	**(3,124)**	**(5%)**	**4,148**	

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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