

Program Endorsement Brief: 0708.10/Computer Networking Entry Network Technician

Los Angeles/Orange County Center of Excellence, March 2021

Summary Analysis

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Education:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Emerging Occupation(s)			
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	

The Los Angeles/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 five middle-skill occupations: *computer systems analysts* (15-1211); *computer network support specialists* (15-1231); *computer user support specialists* (15-1232); *computer network architects* (15-1241); and *network and computer systems administrators* (15-1244). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.¹ Although three of the five occupations in this report 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. Since this proposed program is focused on entry-level networking technician positions, *computer network support specialists* should be considered the target occupation since it typically requires an associate degree instead of a bachelor's degree. Although not always focused directly on networking issues, *computer user support specialists* could also be a target occupation since it typically requires some college coursework, but not an actual 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 occupations in the region. While entry-level wages exceed the living wage in both Los Angeles and Orange counties, more than half of the regional job openings for the occupations in this report typically require a bachelor's degree. **Therefore, due to some of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

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.

Demand:

- **Supply Gap Criteria** – Over the next five years, there is projected to be **4,353 jobs available annually** in the region due to new job growth and replacements, **which is more than the 1,415 awards conferred annually** by educational institutions in the region.
- **Living Wage Criteria:** Within Los Angeles County/Orange County, annual job openings for these five occupations have entry-level wages above the county's living wage.
- **Educational Criteria** –Within the LA/OC region, **51% of the annual job openings** for occupations of interest **typically require a bachelor's degree**.
 - National-level educational attainment data indicates **between 20.8% and 39.2% of workers in the field have completed some college or an associate degree**.

Supply:

- There are **26 community colleges** in the LA/OC region that issue awards related to the five occupations of interest, conferring an average of **706 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **709 awards conferred annually** in related training programs by non-community college institutions.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for the five occupations of interest. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 2% through 2024. There will be more than 4,000 job openings per year through 2024 due to job growth and replacements.

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.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties²

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	42,924	43,626	702	2%	2,970
Orange	19,232	19,871	640	3%	1,382
Total	62,156	63,497	1,342	2%	4,353

² Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these occupations in Los Angeles County, as they relate to the county's living wage. Orange 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.

Los Angeles County: Computer networking-related occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County).³ Typical entry-level hourly wages are in a range between \$21.73 and \$39.09. Computer systems analysts, computer network architects, and network and computer systems administrators earn higher wages relative to computer network support specialists and computer user support specialists. Experienced workers can expect to earn wages between \$34.25 and \$70.23, which are higher than the living wage estimate.

Orange County: Computer networking-related occupations have entry-level wages above the living wage for one adult (\$17.36 in Los Angeles County).⁴ Typical entry-level hourly wages are in a range between \$21.28 and \$37.99. Computer systems analysts, computer network architects, and network and computer systems administrators earn higher wages relative to computer network support specialists and computer user support specialists. Experienced workers can expect to earn wages between \$33.55 and \$68.26, which are higher than the living wage estimate.

Job Postings

There were 17,591 online job postings related to the five occupations of interest listed in the past 12 months. The highest number of job postings were for systems administrator, business systems analyst, and network engineer. The top skills were technical support, customer service, and project management. The top employers, by number of job postings, in the region were Anthem Blue Cross, Northrop Grumman, and The Boeing Company.

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 requirements for the computer networking-related occupations studied in this report:

- **Bachelor's degree:** computer systems analysts (15-1211), computer network architects (15-1241), network and computer systems administrators (15-1244)
- **Associate degree:** computer network support specialists (15-1231)
- **Some college, no degree:** computer user support specialists (15-1232)

³ Living wage data was pulled from California Family Needs Calculator on 3/17/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

⁴ Ibid.

In the LA/OC region, 51% of the annual job openings typically require a bachelor’s degree. However, the national-level educational attainment data indicates that between 20.8% and 39.2% of workers in the field have completed some college or an associate degree. Of the 59% of job postings listing a minimum education requirement in Los Angeles/Orange County, 74.4% (7,786) requested a bachelor’s degree, 7.4% (779) requested an associate degree, and 18.2% (1,905) requested high school or vocational training.

In addition to educational requirements, many of these occupations include certification requirements. The top certifications listed were certified A+ technician, IT infrastructure library (ITIL) certification, and cisco certified network associate (CCNA).

Educational Supply

Community College Supply—Exhibit 2 shows the annual and three-year average number of awards conferred by programs that have historically trained for the occupations of interest. Programs include: Information Technology, General (070100); Computer Information Systems (0702.00); Computer Systems Analysis (0707.30); Computer Infrastructure and Support (0708.00); Computer Networking (0708.10); Computer Support (0708.20); and World Wide Web Administration (0709.00). The colleges with the most completions in the region are Mt. San Antonio, West LA, and Coastline. Over the past 12 months, there were eight other related program recommendation requests from regional community colleges.

Exhibit 2: Regional community college awards (certificates and degrees), 2016-2019

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Average
0701.00	Information Technology, General	East LA	8	15	23	15
		LA Harbor	7	6	-	4
		LA Mission	4	1	1	2
		Long Beach	27	25	34	29
		Mt San Antonio	61	79	74	71
		Santa Monica	-	-	39	13
		West LA	3	4	4	4
		LA Subtotal	110	130	175	138
		Cypress	1	-	-	0
		OC Subtotal	1	-	-	0
		Supply Subtotal	111	130	175	138
		0702.00	Computer Information Systems	Citrus	5	7
Compton	1			-	1	1
East LA	14			16	19	16
El Camino	15			18	14	16
Glendale	2			-	-	1

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Average
		LA City	3	4	1	3
		LA Mission	3	9	5	6
		LA Trade	23	14	8	15
		Pasadena	2	1	-	1
		Rio Hondo	10	19	21	17
		West LA	13	6	8	9
		LA Subtotal	91	94	82	89
		Cypress	5	8	5	6
		Fullerton	7	20	15	14
		Orange Coast	-	3	4	2
		Santa Ana	18	6	4	9
		Santiago Canyon	2	2	3	2
		OC Subtotal	32	39	31	34
		Supply Subtotal	123	133	113	123
		0707.30	Computer Systems Analysis	Cerritos	6	4
LA Subtotal	6			4	2	4
Cypress	-			5	2	2
OC Subtotal	-			5	2	2
Supply Subtotal	6			9	4	6
0708.00	Computer Infrastructure and Support	LA Harbor	-	1	1	1
		LA Mission	-	-	2	1
		LA Valley	6	8	5	6
		Long Beach	1	1	3	2
		Mt San Antonio	16	20	24	20
		Pasadena	-	-	1	0
		West LA	-	-	4	1
		LA Subtotal	23	30	40	31
		Coastline	67	65	49	60
		Cypress	1	1	2	1
		OC Subtotal	68	66	51	62
Supply Subtotal	91	96	91	93		

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Average
0708.10	Computer Networking	Cerritos	10	8	11	10
		Glendale	-	6	3	3
		LA City	11	37	23	24
		LA Pierce	37	23	39	33
		Long Beach	25	27	55	36
		Mt San Antonio	9	2	8	6
		Rio Hondo	-	-	5	2
		West LA	52	43	77	57
		LA Subtotal	144	146	221	170
		Coastline	20	12	38	23
		Cypress	28	37	70	45
		Irvine	19	12	11	14
		Saddleback	21	17	10	16
		Santa Ana	-	7	14	7
		OC Subtotal	88	85	143	105
		Supply Subtotal	232	231	364	275
0708.20	Computer Support	Glendale	2	3	10	5
		LA Pierce	14	7	9	10
		Long Beach	-	1	8	3
		Pasadena	1	3	7	4
		LA Subtotal	17	14	34	22
		Cypress	3	1	3	2
		Santa Ana	-	10	9	6
		OC Subtotal	3	11	12	9
		Supply Subtotal	20	25	46	31
0709.00	World Wide Web Administration	Glendale	3	9	6	6
		LA Pierce	5	5	9	6
		Long Beach	5	4	22	10
		West LA	8	24	13	15
		LA Subtotal	21	42	50	38
		Saddleback	5	-	-	2
		OC Subtotal	5	-	-	2

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Average
		Supply Subtotal	26	42	50	40
		Grand Total	609	666	843	706

Non-Community College Supply—Since three of the five occupations typically require a bachelor’s degree, it is important to consider the supply from non-community college institutions in the region that provide relevant training programs. 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: 11.0101 – Computer and Information Sciences, General; 11.0501 – Computer Systems Analysis/Analyst; 11.0901 – Computer Systems Networking and Telecommunication; 11.1003 – Computer and Information Systems Security/Information Assurance; 11.1004 – Web/Multimedia Management and Webmaster; 11.1006 – Computer Support Specialist. Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, non-community college institutions in the region conferred an average of 709 awards annually in related programs.

Exhibit 3: Regional non-community college awards, 2014-2017

CIP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-17 Awards	Latest 3-Yr Award Avg
11.0101	Computer and Information Sciences, General	ABC Technology	15	0	0	5
		Azusa Pacific University	10	20	19	16
		Brand College	1	2	0	1
		Brandman University	19	14	26	20
		California Institute of Technology	48	56	0	35
		Chapman University	6	7	5	6
		Loyola Marymount University	15	16	19	17
		Pacific States University	0	2	1	1
		University of California-Irvine	31	3	1	12
		University of La Verne	14	21	19	18
		University of the People	0	36	57	31
				Supply Subtotal/Average	159	177

CIP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-17 Awards	Latest 3-Yr Award Avg
11.0501	Computer Systems Analysis/Analyst	Brand College	1	2	4	2
		DeVry University-California	110	103	94	102
		University of Phoenix-California	9	8	4	7
		Supply Subtotal/Average	120	113	102	112
11.0901	Computer Systems Networking and Telecommunications	Advanced Computing Institute	6	5	98	36
		Brand College	0	1	2	1
		DeVry University-California	166	154	135	152
		ITT Technical Institute-Sylmar	1	0	0	0
		Mt Sierra College	8	6	5	6
		PCI College	1	0	0	0
		University of Phoenix-California	51	55	27	44
		Supply Subtotal/Average	233	221	267	240
11.1003	Computer and Information Systems Security/Information Assurance	Azusa Pacific University	8	4	3	5
		ITT Technical Institute-Orange	37	0	0	12
		ITT Technical Institute-San Dimas	23	0	0	8
		ITT Technical Institute-Sylmar	19	0	0	6
		ITT Technical Institute-Torrance	6	0	0	2
		Learnet Academy	0	39	48	29
		Mt Sierra College	14	9	8	10
		University of Phoenix-California	111	74	71	85
		Supply Subtotal/Average	218	126	130	158
11.1004	Web/Multimedia Management and Webmaster	ABCO Technology	7	9	12	9
		Pepperdine University	0	1	0	0

CIP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-17 Awards	Latest 3-Yr Award Avg
		University of Phoenix-California	7	5	4	5
		Supply Subtotal/Average	14	15	16	15
11.1006	Computer Support Specialist	Palladium Technical Academy	6	0	0	2
		Southern California Institute of Technology	13	32	16	20
		University of Phoenix-California	0	0	1	0
		Supply Subtotal/Average	19	32	17	23
		Grand Total	763	684	679	709

Appendix A: Occupational demand and wage data by county

Exhibit 4. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Computer Systems Analysts (15-1211)	11,149	11,506	357	3%	797	\$38.91	\$49.46	\$61.73
Computer Network Support Specialists (15-1231)	4,050	4,109	60	1%	294	\$25.78	\$32.49	\$40.97
Computer User Support Specialists (15-1232)	15,882	16,202	319	2%	1,171	\$21.73	\$27.17	\$34.25
Computer Network Architects (15-1241)	3,716	3,697	(19)	(1%)	216	\$39.09	\$54.87	\$70.23
Network and Computer Systems Administrators (15-1244)	8,127	8,112	(15)	(0%)	492	\$34.39	\$44.07	\$55.21
Total	42,924	43,626	702	2%	2,970			

Exhibit 5. 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 Systems Analysts (15-1211)	5,150	5,383	234	5%	379	\$37.78	\$48.03	\$59.95
Computer Network Support Specialists (15-1231)	1,710	1,755	45	3%	126	\$25.24	\$31.82	\$40.12
Computer User Support Specialists (15-1232)	7,268	7,539	271	4%	557	\$21.28	\$26.61	\$33.55
Computer Network Architects (15-1241)	1,739	1,764	25	1%	105	\$37.99	\$53.33	\$68.26
Network and Computer Systems Administrators (15-1244)	3,365	3,431	65	2%	215	\$33.58	\$43.03	\$53.91
Total	19,232	19,871	640	3%	1,382			

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 Required
Computer Systems Analysts (15-1211)	16,299	16,890	591	4%	1,177	Bachelor's degree
Computer Network Support Specialists (15-1231)	5,760	5,864	104	2%	420	Associate degree
Computer User Support Specialists (15-1232)	23,150	23,741	591	3%	1,728	Some college, no degree
Computer Network Architects (15-1241)	5,455	5,460	6	0%	321	Bachelor's degree
Network and Computer Systems Administrators (15-1244)	11,492	11,542	50	0%	707	Bachelor's degree
Total	62,156	63,497	1,342	2%	4,353	

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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