

## Program Recommendation Brief: Cisco Networking

Inland Empire/Desert Center of Excellence, September 2018

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### Summary and Recommendations

- The combined Cisco networking occupations included in this report are projected to have **462 annual openings** each year over the next five years, 2017 through 2022.
- The entry-level wage for each of the Cisco networking occupations is **above the living wage standard of \$12.30 per hour** for a single adult living in the region.
- All occupations listed in this report typically require a bachelor's degree to enter employment, except computer network support specialist. However, a notable percentage of incumbent workers have an education level that can be obtained at a community college.
- **There appears to be an opportunity for program growth** based on the average annual number of program completers for the selected community college programs in the region (**301 annual average credentials**), and the annual openings for Cisco networking occupations across the region (**462 annual openings**).

**Introduction** – This report details the occupations that often require a certificate of achievement in Cisco networking. This certificate validates the ability to install, configure, operate, and troubleshoot medium-size router and switched networks, including implementation and verification of connections to remote sites in a WAN. The five occupations included in the Cisco networking occupational group are the following:

- Computer Systems Analysts
- Computer Network Architects
- Computer Network Support Specialists
- Information Security Analysts
- Network and Computer Systems Administrators

**Occupational Demand**—Demand for individuals proficient in the Cisco networking occupations is increasing in the Inland Empire/Desert Region (Riverside and San Bernardino counties combined). These occupations are projected to have more than 460 annual job openings, each year through 2022. Annual job openings include new jobs due to growth and replacement job opportunities.

Appendix A, Table 1 shows the projected job growth, wages, typical education, training, and work experience required for each of the occupations included in this report.

**Exhibit 1: Occupational demand for the Cisco networking occupational group<sup>1</sup>**

Region	2017 Jobs	2022 Jobs	2017-2022 Change	2017-2022 % Change	Annual Openings
Inland Empire/Desert	5,528	5,980	452	8%	462

**Wages**—Entry-level wages for the Cisco networking positions in the Inland Empire/Desert Region are above the MIT Living wage estimate of \$12.30 per hour, for one adult in the region. Experienced workers can earn from \$39.94 to \$60.01 per hour. To see detailed wages for each occupation, please see Appendix A, Table 1.

**Educational Attainment**—The Bureau of Labor Statistics lists a bachelor’s degree as the typical entry-level education for these occupations. However, the average national educational attainment data indicates that 21% to 41% of workers age 25 years and older that work in these occupations have only obtained a community college-level of education.

**Community College Supply**—Appendix B, Tables 1, 2, and 3 show the annual average number of credentials conferred by community colleges in the requested programs: 0701.00- Information Technology, General, 0702.00- Computer Information Systems, and 0708.10-Computer Networking. Tables 4 & 5 display credentials granted from other educational institutions from 2013 to 2016, along with the relevant CIP code.

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<sup>1</sup> Five-year change (2017-2022) represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

**Student Outcomes**—Exhibit 2 summarizes employment and wage outcomes collected by the Career Technical Education Outcomes Survey (CTEOS). The results of the statewide survey indicate a wage increase following successful completion of the program. A majority of students report finding employment in a field close to their field of study for all three programs.

**Exhibit 2: CTEOS findings, Inland Empire/Desert Region, 2014-15**

Metric	Information Technology, General (TOP 0701.00)	Computer Information Systems (TOP 0702.00)	Computer Networking (TOP 0708.10)
Higher wages	80%	85%	73%
Average hourly wage before coursework	\$21.42	\$20.77	\$21.60
Average hourly wage after coursework	\$25.20	\$23.64	\$26.32
Job closely related to field of study	67%	72%	74%

**Sources**

- California Community Colleges Chancellor’s Office Management Information Systems
- Career Technical Education LaunchBoard
- Chancellor’s Office Curriculum Inventory (COCI 2.0)
- Economic Modeling Specialists, International (EMSI), 2018.3
- Employment Development Department, Labor Market Information Division, OES
- Labor Insight/Jobs (Burning Glass), last 12 month- September 2017 to August 2018
- MIT Living Wage Calculator

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## Appendix A: Occupational demand, wages, education, training, and work experience

Table 1. Cisco networking occupational group, Inland Empire/Desert Region, 2017 - 2022

Occupation (SOC)	2017 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-level to Experienced Wage*	Median Wage*	Average Annual Earnings	Entry-Level Education & On-The-Job Training	Work Experience Required
Computer Systems Analysts (15-1121)	2,104	146	7%	167	\$30.27 to \$45.52	\$37.04	\$79,100	Bachelor's degree & none	None
Network and Computer Systems Administrators (15-1142)	1,828	144	8%	146	\$28.61 to \$45.86	\$35.93	\$77,700	Bachelor's degree & none	None
Computer Network Support Specialists (15-1152)	1,110	95	9%	102	\$24.74 to \$39.94	\$29.52	\$68,100	Associate degree & none	None
Computer Network Architects (15-1143)	312	34	11%	28	\$32.71 to \$60.01	\$43.97	\$98,200	Bachelor's degree & 5 years or more	5 years or more
Information Security Analysts (15-1122)	175	31	18%	19	\$29.77 to \$59.87	\$47.46	\$96,700	Bachelor's degree & less than 5 years	Less than 5 years
<b>Total</b>	<b>5,528</b>	<b>452</b>	<b>8%</b>	<b>462</b>	-	-	-	-	-

Source: EMSI 2018.3

\*Entry Hourly is 25th percentile wage, the median is 50th percentile wage, experienced is 75th percentile wage.

## Appendix B: Regional community college credentials

Table 1: Annual average community college student completions for information technology occupations in the Inland Empire/Desert Region

0701.00 – Information Technology, General	Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
<b>Chaffey</b>	102	
<b>Copper Mountain</b>	178	
<b>Crafton Hills</b>	581	
<b>Desert – A+ Preparatory, Network+ Preparatory, Security+ Preparatory</b>	13	
<b>Mt. San Jacinto</b>	179	
<b>Palo Verde</b>	454	
<b>Riverside</b>	59	
Certificate 6 to < 18 semester units		10
<b>San Bernardino – CIT: Management Information Systems</b>	240	
<b>Victor Valley</b>	702	
<b>Total Community College Headcount (2016-17)</b>	<b>2,510</b>	
<b>Total annual average community college credentials</b>		<b>10</b>

Source: LaunchBoard, IPEDS

Table 3: Annual average community college student completions for computer networking occupations in the Inland Empire/Desert Region

0708.10 – Computer Networking	Community College Headcount (2016-17)	Community College Annual Average Credentials (2014-17)
<b>Chaffey – Cisco Certified Network Professional (CCNP), Cisco CCNP Examination Preparation Level IX, Network Specialist</b>	173	
Certificate 30 to < 60 semester units		48
Certificate 18 to < 30 semester units		50
Certificate 6 to < 18 semester units		2
<b>Mt. San Jacinto</b>	103	
Certificate 30 to < 60 semester units		2
<b>Riverside – Information Security and Cyber Defense</b>	136	
Certificate 6 to < 18 semester units		15
<b>Victor Valley</b>	28	
<b>Total Community College Headcount (2016-17)</b>	<b>439</b>	
<b>Total annual average community college credentials</b>		<b>117</b>

Source: LaunchBoard, IPEDS

Table 2: Annual average community college student completions for computer information systems occupations in the Inland Empire/Desert Region

<b>0702.00 – Computer Information Systems</b>	<b>Community College Headcount (2016-17)</b>	<b>Community College Annual Average Credentials (2014-17)</b>
<b>Barstow</b> – Computer Information Systems, Computer Science, Information Systems Management	329	
Associate Degree		1
<b>Chaffey</b> – Computer Information Systems	1,729	
Associate Degree		21
Certificate 30 to < 60 semester units		6
<b>Copper Mountain</b> – Computer Information Systems		
Associate Degree		4
<b>Crafton Hills</b> – Computer Information Systems	-	
Associate Degree		8
Certificate 18 to < 30 semester units		1
Certificate 6 to < 18 semester units		3
<b>Desert</b> – Computer Information Systems	1,281	
Associate Degree		3
Certificate 30 to < 60 semester units		2
<b>Moreno Valley</b>	565	
<b>Mt. San Jacinto</b> – CIS: General Track, Computer Information Systems	597	
Associate Degree		21
Certificate 30 to < 60 semester units		2
<b>Norco</b>	636	
<b>Palo Verde</b> – Computer Information Systems	-	
Associate Degree		1
Certificate 6 to < 18 semester units		58
<b>Riverside</b>	1,418	
<b>San Bernardino</b> – Computer Info Tech: Management Information Systems, Information Security and Cyber Defense Certificate	127	
Associate Degree		7
Certificate 18 to < 30 semester units		1
<b>Victor Valley</b> – Computer Information Systems	35	
Associate Degree		14
<b>Total Community College Headcount (2016-17)</b>	<b>6,689</b>	
<b>Total annual average community college credentials</b>		<b>152</b>

Source: LaunchBoard, IPEDS

Table 4: Annual average other educational institutions student completions for computer and information sciences, general programs in the Inland Empire/Desert Region

<b>11.0101 – Computer and Information Sciences, General (CIP)</b>	<b>Other Educational Institutions Annual Average Certificates or Other Credit Credentials (2013-16)</b>
<b>Milan Institute – Palm Desert</b>	
Award 1 < 2 academic years	3
<b>Total annual average other credentials (2013-16)</b>	<b>3</b>

Source: IPEDS

Table 5: Annual average other educational institutions student completions for emergency medical services programs and paramedic programs in the Inland Empire/Desert Region

<b>15.1202 – Computer Technology/Computer Systems Technology (CIP)</b>	<b>Other Educational Institutions Annual Average Certificates or Other Credit Credentials (2013-16)</b>
<b>Mayfield</b>	
Award < 1 academic year	19
<b>Total annual average other credentials (2013-16)</b>	<b>19</b>

Source: IPEDS