



Cisco Certified Network Associate (CCNA) Occupations Labor Market Information Report Hartnell College

Prepared by the San Francisco Bay Center of Excellence
for Labor Market Research
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Recommendation

Based on all available data, there appears to be an undersupply of Cisco Certified Network Associate (CCNA) workers compared to the demand for this cluster of occupations in the Bay region and in the SC-Monterey sub-region (Monterey, San Benito, and Santa Cruz Counties.) There is a projected annual gap of about 1,830 students in the Bay region and 35 students in the SC-Monterey Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0708.00 - Computer Infrastructure and Support in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Hartnell College and in the region.

Introduction

This report profiles Cisco Certified Network Associate (CCNA) Occupations in the 12 county Bay region and in the SC-Monterey sub-region for a proposed new program at Hartnell College.

- **Computer Network Architects (SOC 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. Excludes “Information Security Analysts” (15-1122), “Network and Computer Systems Administrators” (15-1142), and “Computer Network Support Specialists” (15-1152).
Entry-Level Educational Requirement: Bachelor's degree
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: 35%
- **Network and Computer Systems Administrators (SOC 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. Excludes “Information Security Analysts”(15-1122), “Computer User Support Specialists” (15-1151), and “Computer Network Support Specialists” (15-1152).
Entry-Level Educational Requirement: Bachelor's *degree*
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: 38%

Occupational Demand

Table 1. Employment Outlook for Cisco Certified Network Associate (CCNA) Occupations in Bay Region

Occupation	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Average Annual Openings	25% Hourly Wage	Median Hourly Wage
Computer Network Architects	7,692	8,531	839	11%	3,394	679	\$48.45	\$64.71
Network and Computer Systems Administrators	14,165	15,762	1,597	11%	6,126	1,225	\$38.24	\$49.06
Total	21,857	24,294	2,437	11%	9,520	1,904	\$41.83	\$54.57

Source: EMSI 2019.3

Bay Region includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Cisco Certified Network Associate (CCNA) Occupations in SC-Monterey Sub-Region

Occupation	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Average Annual Openings	25% Hourly Wage	Median Hourly Wage
Computer Network Architects	78	85	6	8%	34	7	\$18.31	\$27.64
Network and Computer Systems Administrators	394	412	18	5%	143	29	\$31.78	\$40.04
TOTAL	472	496	24	5%	177	35	\$29.55	\$37.98

Source: EMSI 2019.3

SC-Monterey Sub-Region includes Monterey, San Benito, and Santa Cruz Counties

Job Postings in Bay Region and SC-Monterey Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (January 2019 - December 2019)

Occupation	Bay Region	SC-Monterey
Network and Computer Systems Administrators	7,972	160
Computer Network Architects	6,085	67
Telecommunications Engineering Specialists	459	6
Total	14,516	233

Source: Burning Glass

Table 4a. Top Job Titles for Cisco Certified Network Associate (CCNA) Occupations for latest 12 months (January 2019 - December 2019) Bay Region

Common Title	Bay	Common Title	Bay
Network Engineer	2,485	Information Systems Analyst	127
Systems Administrator	1,717	Information Technology Systems Administrator	113
Senior Systems Administrator	437	Reliability Engineer	109
Linux Administrator	410	Wireless Engineer	103
Linux Systems Administrator	366	Server Engineer	102
Network Administrator	340	Administrator	96
Network Architect	339	Head	89
Senior Architect	328	Software Development Engineer	87
Information Technology Administrator	217	Platform Architect	87
Systems Engineer	199	Service Delivery Manager	84
Window Systems Administrator	177	Data Architect	81
Network Manager	173	Engineer	73

Cisco Certified Network Associate (CCNA) Occupations in 12 County Bay Region and in SC-Monterey Sub-Region, 2020

Sharepoint Administrator	139	Network Technician	70
Windows Administrator	132	Unix Administrator	69

Table 4b. Top Job Titles for Cisco Certified Network Associate (CCNA) Occupations for latest 12 months (January 2019 - December 2019) SC-Monterey Sub-Region

Common Title	SC-Monterey	Common Title	SC-Monterey
Network Engineer	35	Support Coordinator	3
Systems Administrator	33	Sccm Administrator	3
Network Administrator	19	Information Technology Systems Administrator	3
Linux Systems Administrator	17	Information Technology It Programmer/Developer, Healthcare Industry	3
Senior Systems Administrator	12	Information Technology Analyst	3
Window Systems Administrator	7	Windows Systems Administrative	2
Junior Network Engineer	7	Utility Systems Operator	2
Systems Operator	5	Network Analyst	2
Sharepoint Administrator	5	Junior Systems Administrative	2
Senior Vmware Administrator	5	Information Systems Analyst	2
Linux Administrator	5	Finance Support Coordinator	2
Information Technology Administrator	5	Chief Architect	2
Network Architect	4	Automation Engineer, Biotechnology	2
Switch Technician	3	Unix Administrator	1

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Cisco Certified Network Associate (CCNA) Workers in Bay Region

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2018)	Jobs in Industry (2022)	% Change (2018-22)	% in Industry (2018)
Custom Computer Programming Services (541511)	4,137	4,843	17%	19%
Computer Systems Design Services (541512)	2,560	2,882	13%	12%
Internet Publishing and Broadcasting and Web Search Portals (519130)	1,267	1,628	28%	6%
Data Processing, Hosting, and Related Services (518210)	1,089	1,477	36%	5%
Corporate, Subsidiary, and Regional Managing Offices (551114)	1,109	1,167	5%	5%
Electronic Computer Manufacturing (334111)	1,037	1,119	8%	5%
Software Publishers (511210)	782	980	25%	4%
Other Computer Related Services (541519)	560	680	21%	3%
Local Government, Excluding Education and Hospitals (903999)	518	529	2%	2%
Wired Telecommunications Carriers (517311)	399	350	-12%	2%
Temporary Help Services (561320)	385	400	4%	2%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715)	367	393	7%	2%
Engineering Services (541330)	268	291	9%	1%
Colleges, Universities, and Professional Schools (611310)	237	254	7%	1%
Colleges, Universities, and Professional Schools (State Government) (902612)	236	229	-3%	1%

Source: EMSI 2019.3

Table 6. Top Employers Posting Cisco Certified Network Associate (CCNA) Occupations in Bay Region and SC-Monterey Sub-Region (January 2019 - December 2019)

Employer	Bay	Employer	Bay	Employer	SC-Monterey
Google Inc.	129	University California	32	Northrop Grumman	10
Vmware Incorporated	117	General Dynamics	31	General Dynamics	10
Apple Inc.	106	Amazon	31	University California	6
Cisco Systems Incorporated	90	NTT Data	30	Itc Infotech	4
Anthem Blue Cross	73	Idc Technologies	29	E-Talent Network	4
Lockheed Martin Corporation	71	Xoriant Incorporated	28	California State University	4
Accenture	65	Stanford University	28	22nd Century Technologies	4
IBM	60	Intel Corporation	28	Mount Indie	3
Facebook	55	Salesforce	27	Looker Group	3
Aramark	51	Republic Bancorp	27	Isl Techsolutions Inc	3
Wipro	48	Infoobjects Inc	27	Devine Consulting Incorporated	3
Oracle	46	Taosmountain	26	Deloitte	3
Verizon Communications Incorporated	43	Splunk, Inc	26	Abacus Technology Corporation	3
Nvidia Corporation	43	Lucile Packard Childrens Hospital	26	West Corporation	2
Northrop Grumman	43	Genentech	26	Vmware Incorporated	2
Astrea Partners	36	Econosoft	26	University Of California Santa Cruz	2
Deloitte	34	Cynet Systems	24	Monterey Bay Aquarium	2

Source: Burning Glass

Educational Supply

There are four (4) community colleges in the Bay Region issuing 74 awards on average annually (last 3 years) on TOP 0708.00 - Computer Infrastructure and Support. There are no colleges in the SC-Monterey Sub-Region issuing awards on average annually (last 3 years) on this TOP code.

Table 7. Awards on TOP 0708.00 - Computer Infrastructure and Support in Bay Region

College	Sub-Region	Associates	Certificate 18+ units	Certificate Low unit	Total
City College of San Francisco	Mid-Peninsula	44		14	58
College of San Mateo	Mid-Peninsula	1	-	1	2
Los Medanos College	East Bay	6	4	3	13
Ohlone College	East Bay			1	1
Total Bay Region		51	4	19	74
Total SC-Monterey Sub-Region		0	0	0	0

Source: Data Mart

Note: The annual average for awards is 2015-16 to 2017-18.

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,904 annual openings for the Cisco Certified Network Associate (CCNA) occupational cluster and 74 annual (3-year average) awards for an

annual undersupply of 1,830 students. In the SC-Monterey Sub-Region, there is also a gap of 35 annual openings and no annual (3-year average) awards for an annual undersupply of 35 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0708.00 - Computer Infrastructure and Support

2015-16	Bay (All CTE Programs)	Hartnell College (All CTE Programs)	State (0708.00)	Bay (0708.00)	SC-Monterey (0708.00)	Hartnell College (0708.00)
% Employed Four Quarters After Exit	74%	81%	66%	72%	57%	n/a
Median Quarterly Earnings Two Quarters After Exit	\$10,550	\$19,867	\$10,986	\$13,156	\$10,432	n/a
Median % Change in Earnings	46%	23%	37%	47%	64%	n/a
% of Students Earning a Living Wage	63%	77%	62%	68%	65%	n/a

Source: Launchboard Pipeline (version available on 1/3/20)

Skills, Certifications and Education

Table 9. Top Skills for Cisco Certified Network Associate (CCNA) Occupations in Bay Region (January 2019 - December 2019)

Skill	Postings	Skill	Postings	Skill	Postings
Linux	4,058	Transmission Control Protocol / Internet Protocol (TCP / IP)	1,507	Cisco Switching	1,067
System Administration	4,008	UNIX	1,481	Microsoft PowerShell	976
Cisco	3,109	Border Gateway Protocol	1,471	Scheduling	971
Network Engineering	3,005	Network Troubleshooting	1,405	Oracle	954
Python	2,896	Virtual Private Networking (VPN)	1,353	Hardware and Software Configuration	946
VMware	2,317	System/Network Configuration	1,316	Information Systems	940
Domain Name System (DNS)	1,985	Dynamic Host Configuration Protocol (DHCP)	1,262	Hardware and Software Installation	925
Routers	1,740	Java	1,205	Network Security	922
Wide Area Network (WAN)	1,738	OSPF	1,202	Software Development	915
Technical Support	1,658	Open Shortest Path First (OSPF)	1,202	Disaster Recovery Planning	891
Microsoft Active Directory	1,633	PERL Scripting Language	1,190	Telecommunications	888
Virtualization	1,618	Network Infrastructure (Edge POE Devices)	1,175	Voice over IP (VoIP)	873
SQL	1,601	Network Administration	1,144	Bash	867
Project Management	1,575	Windows Server	1,083	Configuration Management	831

Cisco Certified Network Associate (CCNA) Occupations in 12 County Bay Region and in SC-Monterey Sub-Region, 2020

Customer Service	1,540	Ansible	1,070	Puppet	797
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Source: Burning Glass

Table 10. Certifications for Cisco Certified Network Associate (CCNA) Occupations in Bay Region (January 2019 - December 2019)

Note: 76% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

Certification	Postings	Certification	Postings
Cisco Certified Network Professional (CCNP)	847	SANS/GIAC Certification	123
Cisco Certified Network Associate (CCNA)	843	Certified A+ Technician	113
IT Infrastructure Library (ITIL) Certification	627	Juniper Networks Certified Internet Professional	110
Cisco Certified Internetwork Expert (CCIE)	588	Vmware Certified Professional (VCP)	106
Security Clearance	379	CompTIA Network+	105
CompTIA Security+	376	Cisco Certified Design Professional (CCDP)	100
Microsoft Certified Solutions Associate (MCSA)	300	Red Hat Certified Engineer (RHCE)	99
Microsoft Certified Solutions Expert (MCSE)	292	Juniper Networks Certified Internet Expert	91
Driver's License	287	Red Hat Certified System Administrator (RHCSA)	82
ITIL Certification	183	Microsoft Certified Professional (MCP)	67
Project Management Certification	155	Juniper Networks Certified Internet Associate	67
Certified Information Systems Security Professional (CISSP)	147	Juniper Networks Certified Internet Specialist	65

Source: Burning Glass

Table 11. Education Requirements for Cisco Certified Network Associate (CCNA) Occupations in Bay Region

Note: 49% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	387	5%
Associate Degree	299	4%
Bachelor's Degree or Higher	6,230	91%

Source: Burning Glass

Methodology

Occupations for this report were identified by use of skills listed in O*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

Sources

O*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard www.calpassplus.org/Launchboard/

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor's Office MIS system

Contacts

For more information, please contact:

- Doreen O'Donovan, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), doreen@baccc.net or (831) 479-6481
- John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544