** Cloud Computing Occupations**

**Labor Market Information Report**

**College of San Mateo**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

January 2019

# Recommendation

Based on all available data, there appears to be a significant undersupply of Cloud Computing workers compared to the demand for this cluster of occupations in the Bay region and in the Mid-Peninsula sub-region (San Francisco and San Mateo Counties). The gap is about 5,541 students annually in the Bay region and 1,812 students annually in the Mid-Peninsula Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0707.10 - Computer Programming in the state and region. It is recommended that this 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 College of San Mateo and in the region.

# Introduction

This report profiles Cloud Computing Occupations in the 12 county Bay region and in the Mid-Peninsula sub-region for a proposed new program at College of San Mateo.

|  |
| --- |
| * **Computer Systems Analysts (SOC 15-1121):** Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software. |
| *Entry-Level Educational Requirement: Bachelor's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 21%* |
|  |
| * **Database Administrators (SOC 15-1141):** Administer,test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases. Excludes “Information Security Analysts” (15-1122). |
| *Entry-Level Educational Requirement: Bachelor's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 21%* |
|  |
| * **Software Developers, Systems Software (SOC 15-1133):** Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. May design embedded systems software. Apply principles and techniques of computer science, engineering, and mathematical analysis. |
| *Entry-Level Educational Requirement: Bachelor's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 13%* |
|  |
| * **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 Cloud Computing Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Computer Systems Analysts | 32,292 | 36,023 | 3,731 | 12% | 2,888 | 2,123 | $33.25 | $53.21 |
| Database Administrators | 4,852 | 5,528 | 676 | 14% | 458 | 322 | $25.88 | $49.62 |
| Software Developers, Systems Software | 40,880 | 44,555 | 3,675 | 9% | 3,409 | 2,667 | $40.33 | $65.52 |
| Network and Computer Systems Administrators | 15,697 | 17,336 | 1,639 | 10% | 1,334 | 995 | $29.79 | $49.09 |
| **Total** | **93,721** | **103,442** | **9,721** | **10%** | **8,089** | **6,107** | **$35.38** | **$57.70** |

*Source: EMSI 2018.4*

**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 Cloud Computing Occupations in Mid-Peninsula Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Computer Systems Analysts | 11,488 | 13,364 | 1,876 | 16% | 1,147 | 769 | $36.72 | $56.09 |
| Database Administrators | 1,618 | 1,928 | 310 | 19% | 172 | 109 | $30.84 | $51.41 |
| Software Developers, Systems Software | 11,075 | 12,901 | 1,826 | 16% | 1,108 | 743 | $42.39 | $65.17 |
| Network and Computer Systems Administrators | 4,714 | 5,495 | 781 | 17% | 463 | 306 | $29.24 | $51.19 |
| **TOTAL** | **28,896** | **33,689** | **4,793** | **17%** | **2,890** | **1,927** | **$37.34** | **$58.51** |

*Source: EMSI 2018.4*

**Mid-Peninsula Sub-Region** includes San Francisco and San Mateo Counties

### Job Postings in Bay Region and Mid-Peninsula Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (Jan 2018 - Dec 2018)**

| Occupation | Bay Region | Mid-Peninsula |
| --- | --- | --- |
| Computer Systems Analysts (15-1121.00) | 13,952 | 5,215 |
| Database Administrators (15-1141.00) | 10,647 | 4,023 |
| Network and Computer Systems Administrators (15-1142.00) | 6,864 | 2,208 |
| Software Developers, Systems Software (15-1133.00) | 1,308 | 416 |
| Informatics Nurse Specialists (15-1121.01) | 23 | 8 |
| **Total** | **32,771** | **11,862** |

*Source: Burning Glass*

**Table 4. Top Job Titles for Cloud Computing Occupations for latest 12 months (Jan 2018 - Dec 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | Mid-Peninsula | Common Title | Bay | Mid-Peninsula |
| Business Systems Analyst | 2,321 | 948 | SQL Developer | 301 | 106 |
| Data Engineer | 2,117 | 895 | Senior Systems Administrator | 299 | 107 |
| Systems Administrator | 1,541 | 514 | Database Engineer | 286 | 121 |
| Senior Data Engineer | 969 | 503 | Information Technology Analyst | 277 | 116 |
| Developer | 870 | 297 | Technical Analyst | 271 | 114 |
| Systems Analyst | 760 | 266 | Business Analyst | 205 |  |
| Database Administrator | 758 | 242 | Database Developer | 196 | 90 |
| Technical Consultant | 523 | 254 | Oracle Consultant | 195 | 58 |
| ETL Developer | 456 | 168 | Information Technology Business Analyst | 189 | 88 |
| Software Development Engineer | 432 | 129 | Information Technology Administrator | 188 | 87 |
| Linux Administrator | 401 | 59 | Database Analyst | 184 |  |
| Network Administrator | 348 | 87 | Information Technology Consultant | 180 | 71 |
| Oracle Database Administrator | 337 | 86 | Salesforce Administrator | 175 | 103 |
| Linux Systems Administrator | 316 | 72 | Oracle Developer | 162 | 67 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Cloud Computing Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2017) | Jobs in Industry (2022) | % Change (2017-22) | % in Industry (2017) |
| Custom Computer Programming Services (541511) | 19,669 | 19,933 | 14% | 21.1% |
| Computer Systems Design Services (541512) | 12,355 | 12,357 | 11% | 13.1% |
| Electronic Computer Manufacturing (334111) | 8,720 | 8,780 | 4% | 9.3% |
| Software Publishers (511210) | 5,467 | 5,589 | 18% | 5.9% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 5,062 | 5,164 | 32% | 5.5% |
| Data Processing, Hosting, and Related Services (518210) | 3,658 | 3,808 | 33% | 4.0% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 3,277 | 3,362 | 6% | 3.6% |
| Other Computer Related Services (541519) | 2,707 | 2,729 | 19% | 2.9% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 1,797 | 1,834 | (7%) | 1.9% |
| Semiconductor and Related Device Manufacturing (334413) | 1,332 | 1,325 | (7%) | 1.4% |
| Engineering Services (541330) | 1,275 | 1,282 | 10% | 1.4% |
| Local Government, Excluding Education and Hospitals (903999) | 1,060 | 1,062 | 3% | 1.1% |
| Computer and Computer Peripheral Equipment and Software Merchant Wholesalers (423430) | 1,036 | 1,036 | (4%) | 1.1% |
| Temporary Help Services (561320) | 961 | 956 | 4% | 1.0% |
| Research and Development in Biotechnology (except Nanobiotechnology) (541714) | 922 | 946 | 36% | 1.0% |

*Source: EMSI 2018.4*

**Table 6. Top Employers Posting Cloud Computing Occupations in Bay Region and Mid-Peninsula Sub-Region (Jan. 2018 – Dec. 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Mid-Peninsula |
| Google Inc. | 278 | Wipro | 82 | Accenture | 123 |
| Accenture | 244 | Capgemini | 79 | Facebook | 115 |
| Apple Inc. | 231 | Infoobjects Inc | 79 | Salesforce | 93 |
| Cisco Systems Incorporated | 166 | Mumba Technologies | 77 | Deloitte | 90 |
| Capital Markets Placement | 162 | Flexton Incorporated | 75 | Matchpoint Solutions Incorporated | 82 |
| Scoop Technologies | 150 | Codeforce 360 | 72 | Wells Fargo | 79 |
| Deloitte | 129 | University California | 67 | Oracle | 69 |
| IBM | 129 | Republic Bancorp | 66 | Capgemini | 65 |
| Facebook | 125 | Vdart, Inc | 63 | Republic Bancorp | 64 |
| Techfetch Com | 125 | Diverse Lynx | 61 | IBM | 63 |
| Matchpoint Solutions Incorporated | 124 | Microsoft Corporation | 59 | Scoop Technologies | 60 |
| Wells Fargo | 120 | Xoriant | 59 | Google Inc. | 52 |
| Vmware Incorporated | 104 | K Anand Corporation | 58 | Capital Markets Placement | 46 |
| Kaiser Permanente | 103 | Bio-Rad Laboratories | 57 | Amazon | 44 |
| Oracle | 98 | Workday, Inc | 56 | Cisco Systems Incorporated | 36 |
| Salesforce | 98 | Intellipro Incorporated | 55 | Uber | 36 |
| Amazon | 95 | Intelliswift Software | 55 | Infoobjects Inc | 32 |
| Cynet Systems | 94 | Nityo Infotech | 55 | Bitsoft International Incorporated | 31 |
| Etouch Systems Corporation | 94 | Paypal | 55 | Mumba Technologies | 31 |
| Stanford University | 82 | SAP | 54 | Autodesk Incorporated | 30 |

*Source: Burning Glass*

# Educational Supply

There are 24 colleges in the Bay Region issuing 566 awards annually on the following TOP codes: TOP 0707.10 - Computer Programming, TOP 0702.00 – Computer Information Systems and TOP 0708.10 - Computer Networking. There are three colleges in the Mid-Peninsula Sub-Region issuing115 awards annually on these three TOP codes.

**Table 7. Awards on TOP 0707.10 - Computer Programming, TOP 0702.00 – Computer Information Systems and TOP 0708.10 - Computer Networking in the Bay Region**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **College** | | **Sub-Region** | | **TOP Code** | | **Headcount** | | **Associates** | | **Certificates** | | **Total** | |
| **Berkeley City College** | | East Bay | | 70710 | | n/a | | 2 | | 4 | | 6 | |
| **Cabrillo College** | | Santa Cruz - Monterey | | 70710 | | 133 | | 6 | | 20 | | 26 | |
| **Cañada College** | | Mid Peninsula | | 70710 | | n/a | |  | |  | |  | |
| **Chabot College** | | East Bay | | 70710 | | 590 | |  | |  | |  | |
| **City College of San Francisco** | | Mid-Peninsula | | 70710 | | 24 | |  | | 54 | | 54 | |
| **College of Alameda** | | East Bay | | 70710 | | 105 | |  | |  | |  | |
| **College of Marin** | | North Bay | | 70710 | | 39 | |  | |  | |  | |
| **College of San Mateo** | | Mid-Peninsula | | 70710 | | 400 | | 0 | | 2 | | 2 | |
| **Contra Costa College** | | East Bay | | 70710 | | n/a | | 1 | | 1 | | 2 | |
| **De Anza College** | | Silicon Valley | | 70710 | | 1,405 | | 8 | | 29 | | 37 | |
| **Diablo Valley College** | | East Bay | | 70710 | | n/a | | 43 | | 112 | | 155 | |
| **Evergreen Valley College** | | Silicon Valley | | 70710 | | 678 | |  | |  | |  | |
| **Foothill College** | | Silicon Valley | | 70710 | | n/a | |  | |  | |  | |
| **Gavilan College** | | Santa Cruz - Monterey | | 70710 | | 414 | | 8 | | 3 | | 11 | |
| **Hartnell College** | | Santa Cruz - Monterey | | 70710 | | 662 | | 11 | | 1 | | 12 | |
| **Laney College** | | East Bay | | 70710 | | 108 | | 1 | | 0 | | 1 | |
| **Las Positas College** | | East Bay | | 70710 | | 471 | | 0 | | 1 | | 1 | |
| **Los Medanos College** | | East Bay | | 70710 | | 921 | |  | |  | |  | |
| **Merritt College** | | East Bay | | 70710 | | 315 | |  | |  | |  | |
| **Mission College** | | Silicon Valley | | 70710 | | 30 | |  | |  | |  | |
| **Monterey Peninsula College** | | Santa Cruz - Monterey | | 70710 | | n/a | |  | |  | |  | |
| **Napa Valley College** | | North Bay | | 70710 | | 145 | |  | |  | |  | |
| **Ohlone College** | | East Bay | | 70710 | | 504 | | 1 | | 0 | | 1 | |
| **San Jose City College** | | Silicon Valley | | 70710 | | 459 | | 6 | | 6 | | 12 | |
| **Santa Rosa Junior College** | | North Bay | | 70710 | | 606 | |  | |  | |  | |
| **Skyline College** | | Mid-Peninsula | | 70710 | | n/a | |  | |  | |  | |
| **Solano College** | | North Bay | | 70710 | | n/a | | 4 | | 0 | | 4 | |
| **West Valley College** | | Silicon Valley | | 70710 | | n/a | |  | |  | |  | |
| **Alameda** | | East Bay | | 70200 | | 512 | | 4 | | 3 | | 7 | |
| **Berkeley** | | East Bay | | 70200 | | 146 | |  | |  | |  | |
| **Chabot** | | East Bay | | 70200 | | 221 | | 2 | |  | | 2 | |
| **Diablo Valley** | | East Bay | | 70200 | | 741 | |  | |  | |  | |
| **Evergreen Valley** | | Silicon Valley | | 70200 | | n/a | | 1 | |  | | 1 | |
| **Gavilan** | | Silicon Valley | | 70200 | | n/a | | 0 | |  | | 0 | |
| **Laney** | | East Bay | | 70200 | | 294 | |  | |  | |  | |
| **Las Positas** | | East Bay | | 70200 | | 368 | | 3 | |  | | 3 | |
| **Los Medanos** | | East Bay | | 70200 | | n/a | |  | | 1 | | 1 | |
| **Marin** | | North Bay | | 70200 | | 181 | | 0 | | 1 | | 1 | |
| **Merritt** | | East Bay | | 70200 | | 390 | | 2 | | 3 | | 6 | |
| **Mission** | | Silicon Valley | | 70200 | | 211 | | 6 | |  | | 6 | |
| **Monterey** | | Santa Cruz & Monterey | | 70200 | | 35 | |  | |  | |  | |
| **Napa** | | North Bay | | 70200 | | 161 | | 3 | | 0 | | 3 | |
| **San Francisco** | | Mid-Peninsula | | 70200 | | 220 | |  | |  | |  | |
| **Santa Rosa** | | North Bay | | 70200 | | 77 | |  | |  | |  | |
| **Skyline** | | Mid-Peninsula | | 70200 | | n/a | | 3 | | 1 | | 3 | |
| **Contra Costa** | | East Bay | | 70810 | | n/a | | 3 | | 12 | | 15 | |
| **Contra Costa** | | East Bay | | 70810 | | 216 | |  | |  | |  | |
| **Deanza** | | Silicon Valley | | 70810 | | 151 | | 10 | | 10 | | 19 | |
| **Diablo Valley** | | North Bay | | 70810 | | 167 | | 5 | | 1 | | 6 | |
| **Foothill** | | Silicon Valley | | 70810 | | n/a | | 1 | |  | | 1 | |
| **Gavilan** | | Silicon Valley | | 70810 | | 24 | | 4 | | 1 | | 5 | |
| **Las Positas** | | East Bay | | 70810 | | n/a | | 4 | | 1 | | 5 | |
| **Los Medanos** | | East Bay | | 70810 | | n/a | | 7 | | 8 | | 15 | |
| **Mission** | | Silicon Valley | | 70810 | | 230 | | 12 | | 20 | | 32 | |
| **Monterey** | | Santa Cruz - Monterey | | 70810 | | 97 | |  | | 1 | | 1 | |
| **Ohlone** | | East Bay | | 70810 | | 495 | | 3 | | 17 | | 20 | |
| **San Francisco** | | Mid-Peninsula | | 70810 | | 1,289 | |  | | 50 | | 50 | |
| **San Jose City** | | Silicon Valley | | 70810 | | 154 | | 6 | | 7 | | 13 | |
| **San Mateo** | | Mid-Peninsula | | 70810 | | 38 | |  | |  | |  | |
| **Santa Rosa** | | North Bay | | 70810 | | 39 | |  | | 20 | | 20 | |
| **Skyline** | | Mid-Peninsula | | 70810 | | n/a | | 4 | | 1 | | 5 | |
| **Total Bay Region** | | | |  | | **13,954** | | **175** | | **391** | | **566** | |
| **Total Mid-Peninsula Sub-Region** | | | |  | | **2,748** | | **7** | | **108** | | **115** | |

# *Source: IPEDS, Data Mart and Launchboard*

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

# Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 6,107 annual openings for the Cloud Computing occupational cluster and 566 annual awards for an annual undersupply of 5,541 students. In the Mid-Peninsula Sub-Region, there is also a gap with 1,927 annual openings and 115 annual awards for an annual undersupply of 1,812 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0707.10 - Computer Programming**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay  (All CTE Programs) | College of San Mateo (All CTE Programs) | State (0707.10) | Bay (0707.10) | Mid-Peninsula (0707.10) | College of San Mateo (0707.10) |
| % Employed Four Quarters After Exit | 74% | 73% | 63% | 65% | 67% | 68% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $24,257 | $21,930 | $27,905 | $32,263 | $41,564 |
| Median % Change in Earnings | 46% | 57% | 51% | 55% | 59% | 44% |
| % of Students Earning a Living Wage | 63% | 57% | 58% | 63% | 63% | 65% |

*Source: Launchboard Pipeline (version available on 1/9/19)*

# Skills, Certifications and Education

**Table 9. Top Skills for Cloud Computing Occupations in Bay Region (Jan 2018 - Dec 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| SQL | 8,870 | Data Warehousing | 2,390 | Performance tuning | 1,857 |
| Python | 6,880 | Customer Service | 2,349 | VMware | 1,856 |
| Oracle | 5,734 | Software Engineering | 2,240 | Scala | 1,841 |
| Java | 5,528 | Database Administration | 2,211 | MySQL | 1,827 |
| Linux | 5,421 | Systems Analysis | 2,202 | Apache Kafka | 1,823 |
| Project Management | 3,872 | Salesforce | 2,160 | Quality Assurance and Control | 1,784 |
| System Administration | 3,794 | Technical Support | 2,131 | Scheduling | 1,762 |
| Apache Hadoop | 3,574 | Business Analysis | 2,098 | PERL Scripting Language | 1,748 |
| Business Process | 3,524 | JavaScript | 2,060 | Shell Scripting | 1,722 |
| Software Development | 3,423 | Information Systems | 2,011 | Data Modeling | 1,660 |
| Extraction Transformation and Loading (ETL) | 3,356 | Apache Hive | 2,005 | Relational Databases | 1,630 |
| Big Data | 3,141 | Pipeline (Computing) | 1,996 | C++ | 1,599 |
| UNIX | 2,908 | SAP | 1,982 | NoSQL | 1,529 |
| Business Systems Analysis | 2,719 | Data Analysis | 1,978 | Machine Learning | 1,516 |
| Business Systems | 2,602 | Data Science | 1,879 | Tableau | 1,487 |

*Source: Burning Glass*

**Table 10. Certifications for Cloud Computing Occupations in the Bay Region (Jan 2018 - Dec 2018)**

Note: 90% 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 |
| IT Infrastructure Library (ITIL) Certification | 663 | Oracle Certification | 89 |
| Driver's License | 452 | Microsoft Certified Professional (MCP) | 78 |
| Project Management Certification | 304 | Vmware Certified Professional (VCP) | 71 |
| Cisco Certified Network Associate (CCNA) | 284 | Certified Information Systems Auditor (CISA) | 67 |
| Security Clearance | 263 | Six Sigma Certification | 63 |
| ITIL Certification | 210 | Microsoft Certified Technology Specialist (MCTS) | 62 |
| Certified Salesforce Administrator | 198 | Certified Salesforce Advanced Administrator | 48 |
| Microsoft Certified Solutions Expert (MCSE) | 197 | SANS/GIAC Certification | 46 |
| Microsoft Certified Solutions Associate (MCSA) | 182 | ITIL Foundation | 43 |
| CompTIA Security+ | 164 | Certified Scrum Trainer (CST) | 42 |
| Cisco Certified Network Professional (CCNP) | 141 | Certified Administrator | 37 |
| Certified Information Systems Security Professional (CISSP) | 138 | Epic Certification | 35 |
| Certified A+ Technician | 128 | SAP Certification | 34 |
| Project Management Professional (PMP) | 124 | Red Hat Certified System Adminstrator (RHCSA) | 33 |
| CompTIA Network+ | 105 | Salesforce Developer | 32 |
| Cisco Certified Internetwork Expert (CCIE) | 96 | Certified Business Analysis Professional (CBAP) | 29 |
| Red Hat Certified Engineer (RHCE) | 94 | Microsoft Certified Systems Administrator (Legacy) | 27 |

*Source: Burning Glass*

**Table 11. Education Requirements for Cloud Computing Occupations in Bay Region**

Note: 52% 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 |
| High school or vocational training | 825 (5%) |
| Associate Degree | 455 (3%) |
| Bachelor’s Degree or Higher | 13,974 (92%) |

*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/](http://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, Data Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), [doreen@baccc.net](mailto:doreen@baccc.net) or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, [jcarrese@ccsf.edu](mailto:jcarrese@ccsf.edu) or (415) 267-6544