Cybersecurity Occupation Cluster

Riverside-San Bernardino-Ontario MSA (Riverside and San Bernardino County combined) and California

# Cybersecurity Occupations

Table 1 lists the focus occupations and alternate job titles for the cybersecurity occupation cluster. Definitions for each of the occupation in this cluster are found on page 6 of this report.

Table 1. Cybersecurity Occupation Cluster

|  |  |
| --- | --- |
| Occupation (SOC) | Alternate Job Titles |
| Information Security Analysts  (15-1122) | Computer Security Specialist, Computer Specialist, Data Security Administrator, Information Security Analyst, Information Security Manager, Information Security Officer, Information Security Specialist, Information Systems Security Analyst, Information Technology Security Analyst, Information Technology Specialist |
| Network and Computer Administrators  (15-1142) | Wide Area Network Administrator (WAN Administrator), Network Systems Coordinator, Network Support Manager, Network Support Coordinator, Network Manager, Network Coordinator, Network Analyst, Local Area Network Administrator (LAN Administrator), Telecommunications Manager, Telecommunications Analyst |
| Computer User Support Specialists  (15-1151) | Computer Specialist, Computer Support Specialist, Computer Technician, Electronic Data Processing Auditor (EDP Auditor), Help Desk Analyst, Information Technology Specialist (IT Specialist), Network Support Specialist, Network Technician, Support Specialist, Technical Support Specialist |

# Cybersecurity Occupational Outlook in Riverside-San Bernardino-Ontario MSA

Computer user support specialists occupation is expected to increase employment by 12 percent by 2020, adding almost 450 new jobs. This occupation is projected to have 140 annual job openings due to growth in this occupation and replacement need (e.g. retirements). Information security analysts are expected to grow 24 percent by 2020. Overall, this occupation cluster is projected to add just over 660 jobs by 2020; over 200 jobs in the occupation cluster will be available annually due to new job growth and replacement need. In 2015, there were a combined 1,692 job postings for the cybersecurity cluster occupations in the local region; 224 information security analysts, 511 network and computer administrators, and 937 computer user support specialist online job postings.

Table 2. Cybersecurity Cluster in Riverside-San Bernardino-Ontario MSA, Five-year Projections

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Occupation | 2015 Jobs | 2020 Jobs  Five-yr | Five-yr Growth | Five-yr % Growth | Annual Openings |
| Computer User Support Specialists | 3,578 | 4,025 | 447 | 12% | 140 |
| Network and Computer Systems Administrators | 1,868 | 2,050 | 182 | 10% | 64 |
| Information Security Analysts | 139 | 172 | 33 | 24% | 9 |
| Total | **5,586** | **6,247** | **661** | **12%** | **212** |

Source: EMSI 2016.4 Class of Worker

# Wages and Education

Table 4 below lists the entry level, median, and experienced earnings for the cybersecurity occupation cluster. The entery hourly earnings for each of the occupations in this cluster is above the MIT living wages of $11.75 per hour for the local region. The entry level education and on-the job training for cybersecurity occupations are also listed; computer user support specialists enter the occupation with some college, no degree. Information security analysts and network and computer systems administrators typically require a bachelor’s degree.

Table 4. Wage and Educational Requirements for the Cybersecurity Occupations in the Riverside- San Bernardino MSA

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Occupation | Entry Hourly  Earnings | Median Hourly Earnings | Experienced Hourly Earnings | Median Annual Salary | Typical Entry Level Education | Typical On-The-Job Training |
| Information Security Analysts | $30.24 | $49.87 | $73.02 | $105,352 | Bachelor’s degree | None |
| Network and Computer Systems Administrators | $25.27 | $42.59 | $64.20 | $90,730 | Bachelor’s degree | None |
| Computer User Support Specialists | $17.00 | $28.00 | $44.13 | $60,923 | Some college, no degree | None |
| Averages | **$30.24** | **$34.71** | **$53.28** | **$85,668** | **-** | **-** |

Source: EMSI 2016.4 Class of Worker. Entry hourly earnings is 10th percentile, experienced hourly earnings is 90th percentile.

Table 5 shows the education requirements from employers in online job postings for occupations in the cybersecurity occupations. Nearly 70 percent of job postings computer user support specialists require at minimum high school or vocational training.

Table 5. Job postings advertisements with minimum education requirements in the Riverside-San Bernardino-Ontario MSA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Occupation | High school or Vocational Training | Associate’s degree | Bachelor’s  degree | Graduate or professional degree |
| Information Security Analysts | 28.5% | 13.3% | 57.6% | 0.7% |
| Network and Computer Systems Administrators | 26.9% | 14.1% | 58.1% | 0.9% |
| Computer User Support Specialists | 66.3% | 11.8% | 20.2% | 1.7% |

## Source: Burning Glass

## Advertised Skills

Table 6 lists the top skills requested by employers in online job postings for each of the occupations in the cybersecurity cluster.

*Table 6. Job postings advertisements with top skills in Riverside- San Bernardino MSA*

|  |  |
| --- | --- |
| Occupation | Top Skills |
| Information Security Analysts | Information Security, Information Systems, Cisco, Project Management, Network Security |
| Network and Computer Systems Administrators | System Administration, Network Administration, Technical Support, VMware, Cisco, LINUX |
| Computer User Support Specialists | Repair, Technical Support, Customer Service, Help Desk Support, Microsoft Office |

## Source: Burning Glass

## Advertised Certifications

Table 7 lists the top certifications requested by employers in online job postings for each of the occupations in the cybersecurity cluster. Security Clearance was the most frequent certification for occupations in this cluster followed by Network + Certified and Microsoft Certified Systems Administrator.

*Table 7. Job postings advertisements with top certifications in Riverside- San Bernardino MSA*

|  |  |
| --- | --- |
| Occupation | Top Certifications |
| Information Security Analysts | Certified Information Systems Security Professional (CISSP), SANS/GIAC Certification, Certified Information Security Manager, Security Clearance |
| Network and Computer Systems Administrators | Cisco Certified Network Associate, Network + Certified,  Microsoft Certified Technology Specialist (MCTS), Security Clearance, Microsoft Certified Systems Administrator |
| Computer User Support Specialists | Certified A+ Technician, Network + Certified, Cisco Certified Network Associate, Security Clearance, Microsoft Certified Systems Administrator |

## Source: Burning Glass

# Cybersecurity Industry

Table 8 lists the top 12 industries for the cybersecurity occupation cluster. Healthcare industry ranks number 11 for industries that employ the occupations in this cluster, highlighted in yellow. According to online job posting data hospitals (31 job postings) and ambulatory health care services industries (12) posted 43 jobs for occupations in the cybersecurity cluster in 2015.

Table 8. Cybersecurity Industry Cluster

| Industry (NAICS) | 2015 Jobs | 2020  Jobs | Five-yr Growth | Five-yr % Change | 2016 Establish-ments |
| --- | --- | --- | --- | --- | --- |
| Elementary and Secondary Schools (Local Government) (903611) | 463 | 501 | 38 | 8% | 1,424 |
| Local Government, Excluding Education and Hospitals (903999) | 367 | 389 | 22 | 6% | 419 |
| Temporary Help Services (561320) | 344 | 421 | 77 | 22% | 253 |
| Other Computer Related Services (541519) | 267 | 327 | 60 | 22% | 31 |
| Custom Computer Programming Services (541511) | 244 | 270 | 26 | 11% | 269 |
| Colleges, Universities, and Professional Schools (Local Government) (903612) | 236 | 262 | 26 | 11% | 28 |
| Colleges, Universities, and Professional Schools (611310) | 200 | 267 | 67 | 34% | 48 |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 191 | 189 | (2) | (1%) | 215 |
| Colleges, Universities, and Professional Schools (State Government) (902612) | 146 | 159 | 13 | 9% | 106 |
| Computer Systems Design Services (541512) | 124 | 135 | 11 | 9% | 207 |
| General Medical and Surgical Hospitals (622110) | 126 | 151 | 25 | 20% | 47 |
| Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers (423450) | 100 | 104 | 4 | 4% | 129 |
| Total | **2,809** | **3,174** | **367** | **-** | **3,176** |

Source: EMSI

# Student Completions

Table 9 shows the projected annual job openings for the occupation cluster in Table 2 with the associated TOP6 programs. Table 9 also shows the annual average regional community college awards. Please note, an award is not equivalent to a single person in search of a job opening since students may earn more than one award, such as a degree in addition to a certificate.

*Table 9: Student Completions and Annual Openings in the Riverside-San Bernardino-Ontario MSA*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TOP06** | **TOP06 Title** | **Total Annual Openings from Table 2** | **Annual Avg Associate Degrees (2012-15)** | **Annual Avg Certificates or Other Credit Awards (2012-15)** | **Total Other Ed. Annual Avg Awards (2012-15)** |
| 070200 | Computer Information Systems | 212 | 83 | 61 | 5 |
| 070600 | Computer Science (transfer) | 5 | 0 | 0 |
| 070800 | Computer Infrastructure and Support | 0 | 1 | 49 |
| 070810 | Computer Networking | 0 | 129 | 140 |
| 070820 | Computer Support | 0 | 0 | 19 |
| **TOTAL** | | **212** | **88** | **191** | **213** |

SOURCE: MIS Datamart

**Occupation Definitions**

Information Security Analysts (SOC: 15-1122)

Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses.

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.

Computer User Support Specialists (SOC: 15-1151)

Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.