

# Cybersecurity Occupation Cluster

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

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

The cybersecurity occupation cluster is comprised of three distinct occupations: Information Security Analysts (SOC code 15-1122), Network and Computer Administrators (15-1142), and Computer User Support Specialists (15-1151). Complete definitions of these occupations and alternative jobs titles can be found on page 6 of this report.

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 1. 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
<b>Total</b>	<b>5,586</b>	<b>6,247</b>	<b>661</b>	<b>12%</b>	<b>212</b>

Source: EMSI 2016.4 Class of Worker

## Wages and Education

Table 2 lists the entry level, median, and experienced earnings for the cybersecurity occupation cluster. The entry hourly earnings for each of the occupations in this cluster are 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 2. Wage and Educational Requirements for the Cybersecurity Occupations in the Riverside- San Bernardino MSA

Occupation	Entry Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings	Average 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
<b>Averages</b>	<b>\$30.24</b>	<b>\$34.71</b>	<b>\$53.28</b>	<b>\$85,668</b>	-	-

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

Table 3 shows the education requirements from employers in online job postings for occupations in the cybersecurity occupation cluster. About 66 percent of job postings for computer user support specialists require at minimum, high school or vocational training. A further 12 percent of employers were looking for a candidate with an associate degree.

Table 3. Job postings advertisements with minimum education requirements in the Riverside-San Bernardino-Ontario MSA

Occupation	High school or Vocational Training	Associate 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 4 lists the top skills requested by employers in online job postings for each of the occupations in the cybersecurity cluster.

Table 4. 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 5 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 5. 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 6 lists the top 12 industries groups for the cybersecurity occupation cluster. Education and hospitals (local government) industry group is the largest employer of the cybersecurity occupation cluster in the two-county region. Colleges, universities, and professional schools industry group is projecting the fastest growth in employment over the five-year time frame at 34 percent.

Table 6. Cybersecurity Industry Cluster

Industry (NAICS)	2015 Jobs	2020 Jobs	Five-yr Growth	Five-yr % Change	2016 Establishments
Education and Hospitals (Local Government) (9036)	741	806	65	9%	1,463
Computer Systems Design and Related Services (5415)	655	750	95	15%	518
Employment Services (5613)	401	471	70	17%	362
Local Government, Excluding Education and Hospitals (9039)	367	389	22	6%	419
Colleges, Universities, and Professional Schools (6113)	200	267	67	34%	48
Management of Companies and Enterprises (5511)	195	191	(4)	(2%)	242
Professional and Commercial Equipment and Supplies Merchant Wholesalers (4234)	171	186	15	9%	297
Education and Hospitals (State Government) (9026)	157	172	15	10%	246
Management, Scientific, and Technical Consulting Services (5416)	153	193	40	26%	1,748
General Medical and Surgical Hospitals (6221)	126	151	25	20%	47
Wired Telecommunications Carriers (5171)	99	111	12	12%	110
Individual and Family Services (6241)	91	108	17	19%	39,321

Source: EMSI

## Student Completions

Table 7 shows the projected annual job openings for the occupation cluster in Table 1 with the associated TOP6 programs. Table 7 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 7: Student Completions and Annual Openings in the Riverside-San Bernardino-Ontario MSA

TOP06	TOP06 Title	Total Annual Openings from Table 1	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
<b>TOTAL</b>		<b>212</b>	<b>88</b>	<b>191</b>	<b>213</b>

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.

Table 8 lists the focus on the reported alternate job titles for the cybersecurity occupation cluster.

*Table 8. Cybersecurity Occupation Alternate Job Titles*

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

Occupation (SOC)	Alternate Job Titles
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