



# Middle Skill Employment

Understanding the Opportunities and Skill Requirements for an IT Workforce

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# FORWARD

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There is a natural partnership of industry (corporate entities) and academia (educational institutions) when it comes to the issues of workforce development.

- The corporate entities depend on a robust supply of qualified and capable workforce talent in order to grow their business and achieve their strategic objectives.
- The educational institutions have an implied contract with their students, promising them meaningful employment upon attainment of their degree credentials.

This partnership can be particularly challenging when it concerns the disciplines of computing and information technologies. New tools, new programming languages, evolving operational policies, new requirements for security and a better understanding and importance on data analytics offer to make the goals for collaboration a moving target. Cyclical cycles of high growth, deep economic correction, and promising recovery only serve to accentuate the struggle to align learning outcomes to industry requirements.

There are many different approaches that are being proposed and experimented with, in order to address the workforce issues that are present in this space.

- Companies, who previously, had looked to large scale outsourcing of jobs to remote geographies and third-party organizations are seeking to be more responsive and move many of these jobs back in house.
- Industries who have been reliant on an immigrant workforce and hopes for an expanded H1-B visa program are acknowledging the commitment to alternative workforce development strategies.
- Academic institutions, funded by federal initiatives, have developed post graduate certificates and stackable credentials designed to retool an incumbent workforce.
- Degree programs are being modified to provide for work/study opportunities in an aim to increase the relevancy and improve the effectiveness of the educational experience.

This report, and the analysis contained herein, is both timely and valuable in its ability to enhance discussion, dialogue and collaboration between industry and academia about this subject. This report analyzes the dimensions of the employment opportunity (number of jobs, average compensation, and geographical distribution of jobs) and the requirements of the opportunity (job responsibilities, technical and soft skill proficiencies) for the middle skill worker, or as some might call him/her, the entry level IT professional.

It is our hope that this report will aid in the development of a roadmap of innovation, invention and alignment for our academic partners and support their strategic alliance with the industry that depends on them.

*Deborah Boisvert*

Executive Director, BATEC

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# INTRODUCTION

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Information technology workers are in high demand, and the gap between the number of qualified candidates and open positions is significant and growing. In 2014, there were 2 million online job postings for professionals in Computing and Information Technology (over 10% of all advertised jobs), and the Bureau of Labor Statistics (BLS) projects that by 2022 Information Technology (hereafter referred to as “IT”) related employment will have grown 18% from its 2012 baseline<sup>1</sup> (66% faster than employment overall). IT jobs pay well, with an average advertised salary of over \$82,800, a 50% premium over the average advertised salary for all jobs.

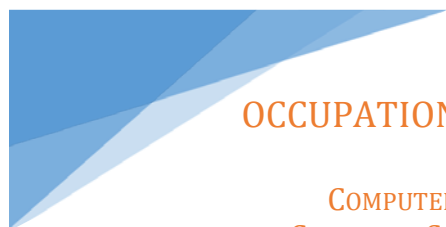


## COMPUTING AND INFORMATION TECHNOLOGIES

2,000,000 ONLINE JOB POSTINGS  
\$82,800 AVERAGE ANNUAL SALARY  
66% HIGHER GROWTH THAN OVERALL EMPLOYMENT

(BURNING GLASS TECHNOLOGIES AND THE BUREAU OF LABOR STATISTICS)

We foresee the need for industry and academia to work collaboratively to address a pending shortfall. Already, IT job postings stay online for 37 days (4 days longer than the national average) with some occupations remaining open 40 days or longer. Surveyed employers, frequently, report a persistent difficulty in finding a skilled workforce, while the introduction of new, emerging technologies and tools promise to make any goal for alignment a moving target.



## OCCUPATIONS STUDIED

COMPUTER PROGRAMMER  
COMPUTER SYSTEM ANALYST  
DATA ENGINEER  
HEALTH INFORMATION SPECIALIST  
INFORMATION SECURITY ANALYST  
NETWORK SUPPORT SPECIALIST  
SOFTWARE DEVELOPER  
USER SUPPORT SPECIALIST  
WEB DEVELOPER

Burning Glass Technologies, the industry leader in the field of real time labor market information, and BATEC – the National Center of Excellence in Computing and Information Technologies entered into a strategic partnership to analyze the demand characteristics and skill requirements of middle skill IT occupations that represent common starting points for students entering the IT workforce. This analysis evaluates demand for these roles both nationally and in a select set of urban areas (Boston, Chicago, Las Vegas, and San Francisco).

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<sup>1</sup> BLS Employment Projections 2012-2022

The source data for this report comes from Burning Glass's comprehensive database of online job postings as well as data from the Bureau of Labor Statistics. The report analyzes both the dimensions of the employment opportunity (number of jobs, projected growth, number of middle skill postings, average salary, and an estimate of supply/demand characteristics) and the detailed profiles of what employers specify as both the responsibilities and qualifications (skills and certifications) that are in high demand. The report also identifies military occupations that depend on similar skillsets in each IT job category.

## KEY FINDINGS

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- Information Technology workers are in high demand – the occupations included in this report *account for around 10% of all advertised jobs*, approximately 1.7 million job postings. Software developers are in highest demand – accounting for over 30% of IT-related job openings.
- Information Technology jobs pay well – the average annual advertised salary for the occupations examined in this report was around \$82,600 – *a premium of 50% above the average for all jobs*.
- Information Technology jobs consistently take longer to fill *most occupations examined in this report remained open longer* than non-IT related jobs.
- Two occupational groups, Health Information Specialist and User Support Specialist, present the greatest opportunities for middle-skill workers, with *close to half the job openings in these occupations being open entry-level job seekers*.
- Significant supply and demand gaps exist for certain occupations (Data Engineer, Information Security Analyst, Data Engineer, Software Developer, Web Developer) and in certain markets (Boston and San Francisco).

Collectively, these findings suggest that educational providers *can play a greater role in directing students* to those occupations where opportunities are plentiful, and that educational institutions *can improve the alignment of their programs with employers' needs*.

## APPROACH AND METHODOLOGY

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The occupational groups examined in this report are listed below with their O\*NET classifications)

- **Computer Programmer:** defined as the Computer Programmer (O\*NET occupation 15-1131.00).
- **Computer System Analyst:** defined as the Computer System Analyst (O\*NET occupation 15-1121.00).
- **Data Engineer:** defined as the Database Administrator (O\*NET occupation 15-1141.00), Data Warehousing Specialist (O\*NET occupation 15-1199.07), and the Business Intelligence Analyst (O\*NET occupation 15-1199.08).
- **Health Information Specialist:** defined as the Medical Record Technician and the Health Information Technician (O\*NET occupation 29-2071.00).
- **Information Security Analyst:** defined as the Information Security Analyst (O\*NET occupation 15-1122.00).
- **Network Support Specialist:** defined as the Network Support Specialist (O\*NET occupation 15-1152.00).
- **Software Developers:** defined as the Application Software Developer (O\*NET occupation 15-1132.00) and the Systems Software Developer (O\*NET occupation 15-1133.00).
- **User Support Specialist:** defined as the User Support Specialist (O\*NET occupation 15-1151.00).
- **Web Developer:** defined as the Web Developer (O\*NET occupation 15-1134.00).

To analyze these occupation groups, Burning Glass mined its database of online job records from over 38,000 online job sites, including job boards, government sites and employer sites. Duplicate postings (postings from multiple sources referring to the same job/company) were removed, and over 70 data fields (such as job title, prerequisite skills, required certifications and prior job experience) were extracted from each unique employment opportunity. These fields were subsequently aggregated for each career area, and form the source material for this report.

Middle skill job postings are defined as those postings requiring two years or less experience. Certain postings, from this group, mandate a degree credential (Associate Degree or Bachelor Degree) while others simply express a preference for a degree credential or remain silent on the subject.

Prerequisite skills are identified as either software skills, specialized skills (technical skills unique to an individual or group of occupations), or baseline skills (skills that are considered to be 'soft' or non-technical). Top skills and certifications are identified based on the frequency of their appearance in job postings.

Veterans' occupational mappings were informed by Burning Glass' catalog of military and civilian occupations. These mappings were developed by identifying the responsibilities and prerequisite skills of military occupations and correlating them to their civilian counterparts.

Sample job postings are provided for each IT career area to provide an illustration of the demands and on-the-job duties for each occupational group.



## DETAILED FINDINGS

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The nine occupational groups (“The 9 Occupations”) examined in this report constitute an important cross section of the labor market. Together, they account for 1.7 million job postings in 2014, 76% of all IT job postings and approximately 10% of all job (IT and non-IT) postings. Software Developer is the largest occupational group examined (close to 700,000 postings), followed by Data Engineer (330,000 postings) and Computer System Analyst (205,000 postings).

The nine occupational groups have grown steadily over the past 5 years (total postings increased 35% from their 2010 baseline), with demand for Information Security Analyst (92%) and Health Information Specialist (70%) skyrocketing over this period. Looking forward, these patterns are projected to continue – the BLS projects growth of 20% or greater for each occupation group, with only minor exception (Computer Programmer and Data Engineer). Particularly strong growth is forecasted for Information Security Analyst (36%) and Computer System Analyst (25%).



The occupations examined in this report pay well. Six of them offer average advertised salaries over \$70,000, and five of them advertise average salaries over \$80,000. Software Developer (\$96,000), Information Security Analyst (\$90,500) and Web Developer (\$88,000) are particularly lucrative employment opportunities. Lower barriers to entry exist for both Health Information Specialist and User Support Specialist, occupations with correspondingly lower average advertised salaries (\$47,100 and \$47,590 respectively).



Employers report difficulty filling open positions, suggesting that the supply of skilled IT workers is falling short of employer demand. The average posting duration for most middle skill occupations, (Health Information and User Support Specialist being the

exception), is above the all job average of 33 days. The shortage of software developers appears to be especially severe; postings for Software Developers remain open 43 days (10 days longer than the all job average, and 6 days longer than the average for all IT jobs).

## Overall Employment (by IT Occupational Group)

The data, below, is sorted by number of postings (largest number to smallest number) with Software Developer representing the largest occupational group, and Network Support Specialist representing the smallest occupational group.

	<b>Jobs <sup>2</sup></b>	<b>Projected Growth <sup>2</sup> (2012 - 2022)</b>	<b>Postings <sup>3</sup> (2014)</b>	<b>Growth <sup>3</sup> (2010 - 2014)</b>	<b>Average Salary <sup>3</sup></b>	<b>Open <sup>3</sup></b>
<b>All IT Occupations</b>	<b>3,834,170</b>	<b>18%</b>	<b>2,216,610</b>	<b>34%</b>	<b>\$82,859</b>	<b>37 Days</b>
<b>The 9 Occupations</b>	<b>3,347,990</b>	<b>19%</b>	<b>1,701,884</b>	<b>35%</b>	<b>\$82,427</b>	<b>38 Days</b>
Software Developer	1,068,870	22%	681,482	29%	\$96,079	43 Days
Data Engineer	324,680	8%	333,442	41%	\$73,781	37 Days
Computer System Analyst	528,320	25%	206,036	32%	\$81,424	35 Days
User Support Specialist	563,540	20%	118,500	41%	\$47,590	29 Days
Web Developer	121,020	20%	109,212	22%	\$87,971	38 Days
Computer Programmer	302,150	8%	91,996	10%	\$84,732	34 Days
Health Information Specialist	184,740	22%	89,047	70%	\$47,100	32 Days
Information Security Analyst	80,180	36%	58,021	92%	\$90,669	38 Days
Network Support Specialist	174,490	7%	14,152	27%	\$65,723	37 Days

<sup>2</sup> Source: Employment related data (Jobs, Projected Growth) is from the Bureau of Labor Statistics

<sup>3</sup> Source: Posting related data (Postings, Growth, Average Salary, Days Open) is from Burning Glass Technologies

## Middle Skill Postings (by IT Occupational Group)

The 9 occupational groups represent common starting points for workers beginning their professional careers in IT. This next section summarizes the dimensions (number of postings, average salary, posting duration) of these employment opportunities (where middle skill postings is defined as those asking for 2 years of experience or less).

	Middle Skill Postings	% of Total	Average Salary	Open
<b>All IT Occupations</b>	<b>460,863</b>	<b>21%</b>	<b>\$50,283</b>	<b>32 Days</b>
<b>The 9 Occupations</b>	<b>386,402</b>	<b>28%</b>	<b>\$66,753</b>	<b>33 Days</b>
User Support Specialist	61,476	52%	\$43,547	25 Days
Health Information Specialist	41,460	47%	\$47,528	30 Days
Data Engineer	77,226	23%	\$62,286	32 Days
Web Developer	23,780	22%	\$76,937	34 Days
Computer System Analyst	41,714	20%	\$70,562	32 Days
Computer Programmer	18,555	20%	\$72,909	33 Days
Software Developer	111,127	16%	\$83,945	40 Days
Information Security Analyst	8,702	15%	\$84,336	31 Days
Network Support Specialist	2,362	17%	\$62,524	33 Days

There were 460,863 IT job postings for middle skill workers in 2014, constituting 21% of all IT postings. The middle skill postings advertise an average salary of \$50,283 and remain open, on average, for 32 days.

This 9 occupational groups analyzed in this report represent 83% of all IT entry level professional jobs (386,402 postings).

Two occupational categories (Health Information Specialist and User Support Specialist) stand out in their level of accessibility to middle skill workers. Over half of the postings for User Support Specialist require two years' experience or less, while 47% of the postings for Health Information Specialist are open to middle skill workers. This suggests that these occupations represent a more accessible entry-point for workers wishing to get a foot in the door of the IT industry – especially those with limited academic credentials.

One occupational career group (Information Security Analyst) is the newest and fastest growing occupation category and yet, it has the lowest percentage of middle skill openings. Employers are, in general, seeking advanced technical proficiency and modest experience from this group and willing to pay a premium for qualified candidates.

# OCCUPATION PROFILES

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## Computer Programmer

Computer Programmers are responsible for writing, testing, analyzing and debugging computer software programs and applications. Nationally, there were 91,996 online job postings for this occupational group in 2014. This represents a 10% increase since 2010 (the lowest posting growth of any IT occupational group). Growth in Boston, Chicago, and San Francisco was particularly robust (demand in each of these urban regions grew at least 20%). The BLS projects modest future growth (Computer Programmer is forecasted to increase 8% by 2022).

Nationally, Computer Programmer postings remain open for 34 days (one of the lower posting durations among the nine IT groups), but in Boston and San Francisco they remain open for 41 and 42 days, respectively. The average advertised salaries for Computer Programmers in Boston and San Francisco are \$99,250 and \$108,795 (premiums of 17% and 28% over the national average of \$84,732). Chicago shows the least evidence of a skills gap with job postings remaining open for 32 days on average.

### Posting Counts and Salary

	Jobs <sup>2</sup>	Projected Growth <sup>2</sup> (2012 - 2022)		Job Postings <sup>3</sup> (2014)	Growth <sup>3</sup> (2010 - 2014)	Average Salary <sup>3</sup>	Open <sup>3</sup>
<b>Nationally</b>	<b>302,150</b>	<b>8%</b>		<b>91,996</b>	<b>10%</b>	<b>\$84,732</b>	<b>34 Days</b>
Boston	8,580	7%		2,839	25%	\$99,250	41 Days
Chicago	16,550	13%		3,841	20%	\$97,441	32 Days
Las Vegas	1,170	7%		245	(9%)	\$80,929	35 Days
San Francisco	8,580	12%		3,195	24%	\$108,795	42 Days

Nationally, 20% of postings for Computer Programmer are open to middle skill workers. In each of the urban areas studied, the local percentage ranged from 15 to 30%. Programming roles offer a robust average salary of \$72,909, and in most of the urban areas (except for Las Vegas) the average advertised salary for middle skill postings is over \$80,000.

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	<b>18,555</b>	<b>20%</b>	<b>\$72,909</b>	<b>33 Days</b>
Boston	503	18%	\$86,117	37 Days
Chicago	738	19%	\$87,197	34 Days
Las Vegas	70	29%	\$74,902	N/A
San Francisco	504	16%	\$106,381	39 Days

## Top Skills

The following list of skills identifies required competencies, specified by employers, for Computer Programmers.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
SQL / SQL Server	Debugging	Communication Skills
JAVA / JAVA Script / jQuery	Web Site Development	Writing
.NET Programming	Web Application Development	Problem Solving
Oracle	Relational Databases	Organizational Skills
Microsoft C#	Software Development	Troubleshooting
Extensible Markup Language (XML)	Software Engineering	Project Management
C++	Technical Support	Research
LINUX / UNIX	Systems Development Life Cycle	Planning
Object-Oriented Design	Systems Analysis	Microsoft Windows
Python	Technical Writing / Editing	Quality Assurance and Control

## Top Certifications

The requirement for certification is not as prominent in this occupational group (approximately 6% of all postings require certification) as in some other IT occupations. The following list shows the top certifications required for Computer Programmer roles.

Top Certifications
Capability Model Maturity Integration (CMMI) Certification
Project Management Certification (e.g. PMP)
Microsoft Certified Solution Developer (MCSD)
JAVA Certification (e.g. Sun Certified JAVA Assoc)
Certified Information Systems Security Professional (CISSP)
Microsoft Certified Professional (MCP)
Microsoft Certified Systems Engineer (MCSE)
IT Infrastructure Library
Microsoft Certified Technology Specialist (MCTS)
Security +

## Top Titles

The following list shows the top job titles employers used to describe Computer Programmer roles. These represent the job titles that students and job seekers should focus on when searching Computer Programmer positions.

Top Titles
Programmer / Analyst
Ruby on Rails Developer
Python Developer
Asp. Net Developer
VB. Net Developer
SAS Programmer
Mainframe Developer
JAVA / J2Ee Developer
JAVA Programmer
.NET Programmer

## Sample Job Posting

### Overview

#### Description

■ is seeking recent college graduates who are interested in working with a company that provides innovative technical solutions that deliver business results.

### Position Specific Details

#### Responsibilities

- Codes, tests, debugs, implements, and documents basic programs. Assists in the modification of company products and/or customer/internal systems to meet the needs of the client and/or end-user.
- Assists in the research and analysis of existing systems and program requirements; assists in preparing documentation to change existing programs. Performs data analysis to support internal and external project needs.
- Designs basic programs for projects or enhancements to existing programs.
- Writes specifications for programs of low to moderate complexity.
- Assists in resolving routine production support problems.
- Assists in the completion of unit testing by preparing test data, running tests and evaluating results. Develops screen tests and debugging problems. Develops test plans to verify logic of new or modified programs.
- Creates basic documentation in work assignments such as program code.
- Conducts routine quality assurance activities such as peer reviews.
- Remains abreast of and researches industry technical trends and new development to maintain current skills and remain current with industry standards.

#### Qualifications

- Bachelor's degree or equivalent combination of education and experience
- Bachelor's degree in computer science, mathematics or related field preferred
- Zero years of experience in programming or testing
- Experience working in a student employment program or related experience
- Experience working with appropriate programming languages, operating systems and software
- Experience working with relational databases to facilitate programming software
  
- 0 – 3 years experience in Java Programming, XSL & XSLT
- Basic programming skills
- Personal computer and business solutions software skills
- Analytical and problem solving skills for design, creation and testing of programs
- Interpersonal skills to interact with team members
- Communication skills to work effectively with team members, support personnel, and clients



## Matching Military Occupations

This list identifies military occupations in the various services for both enlisted and officer career paths that are a possible match for Computer Programmer.

MOC	MOC Title	Service	Career
5309	Computer Science	Navy	Officer
5707	Combat Systems - Software Design	Navy	Officer
9740	Digital Computer System Programmer	Navy	Officer

## Computer System Analyst

Computer System Analysts improve the value of computing assets by testing, analyzing, and modifying existing computer systems to meet technical or client needs. Nationally there were 206,036 online job postings for this occupational group in 2014 (an increase of 32% since 2010). Most urban areas showed comparable growth (with the exception of Las Vegas, which showed exceptional growth of 71%). Future growth is also forecasted to be robust (25% by 2022), and faster than most IT categories (Information Security being the sole exception).

In Boston and San Francisco, postings for Computer System Analysts remain open longer than the national average of 35 days, (40 and 42 days respectively). Las Vegas saw an average posting duration of only 30 days (5 days below the national average). Advertised salaries were much lower in Las Vegas at \$77,366 (\$4,000 below the national average of \$81,424). Candidates, in this occupational group, will find the most favorable markets in Boston and San Francisco (average salaries above \$95,000); while employers, in this occupational group, will find Las Vegas to have an abundance of talent.

### Posting Counts and Salary

	Jobs <sup>2</sup>	Projected Growth <sup>2</sup> (2012 - 2022)		Job Postings <sup>3</sup> (2014)	Growth <sup>3</sup> (2010 - 2014)	Average Salary <sup>3</sup>	Open <sup>3</sup>
<b>Nationally</b>	<b>528,320</b>	<b>25%</b>		<b>206,036</b>	<b>32%</b>	<b>\$81,424</b>	<b>35 Days</b>
Boston	14,760	24%		6,033	32%	\$95,746	40 Days
Chicago	17,470	26%		10,727	43%	\$89,539	35 Days
Las Vegas	1,500	25%		555	71%	\$77,366	30 Days
San Francisco	16,280	27%		6,217	33%	\$98,761	42 Days

Nationally, 20% of postings for Computer System Analyst were open to middle skill workers. These postings had an average advertised salary of \$70,562 and remained open for 32 days. Employers in Boston and San Francisco appear to have the greatest difficulty filling Computer System Analysts roles, with postings remaining open, on average, for 42 days (10 days longer than the national average).

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	<b>41,714</b>	<b>20%</b>	<b>\$70,562</b>	<b>32 Days</b>
Boston	992	16%	\$83,509	42 Days
Chicago	2,208	21%	\$78,337	35 Days
Las Vegas	157	28%	\$85,339	37 Days
San Francisco	1,086	17%	\$80,343	42 Days

## Top Skills

Computer System Analysts require knowledge of a diverse mix of computer programming, IT support, and business analysis skills, and can be a stepping stone into a wide range of career pathways.

The following list of skills identifies required competencies, specified by employers, for Computer Systems Analysts.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
SQL	Business Process	Communication Skills
Oracle	(Business) Systems Analysis	Writing
Microsoft Office	Business Analysis	Organizational Skills
Microsoft Windows	Technical Support	Project Management
JAVA / JAVA Script	System and Network Configuration	Problem Solving
Enterprise Resource Planning	Data Analysis	Planning
UNIX / LINUX	Data Management	Troubleshooting
Extensible Markup Language	Collaboration	Research
Microsoft Visio	Systems Development Life Cycle	Customer Service
Microsoft SharePoint	Technical Writing / Editing	Quality Assurance and Control

## Top Certifications

The requirement for certification in this occupational group (13%) is consistent with the statistical average for all IT jobs. The following list shows the top certifications employers require for Computer System Analyst roles.

Top Certifications
Project Management Certification (e.g. PMP)
Certified Information Systems Auditor (CISA)
Certified Information Systems Security Professional (CISSP)
Microsoft Certified Systems Engineer (MCSE)
IT Infrastructure Library
EPIC Certification
CISCO Certified Network Associate
Certified Information Security Manager (CISM)
Capability Model Maturity Integration (CMMI) Certification
Security +

## Top Titles

The following list shows the top job titles used to describe Computer System Analyst roles. These represent the job titles that students and job seekers should focus on when searching Computer System Analyst positions.

Top Titles
Systems Analyst
IT Business Analyst
Technical Analyst
Technical Consultant
HRIS Analyst
Project Analyst
Technical Lead
Technical Business Analyst
IT Auditor
Drupal Developer

## Sample Job Posting

### Overview

#### Description

The Systems Analyst I provides administrative and technical support by performing data analysis, providing coordination between the system and user groups, developing and modifying programs, assisting in the development of policies and procedures, providing user training and monitoring of system changes.

### Position Specific Details

#### Requirements

- Analyzes user requirements, procedures and problems to automate processing, or to improve existing computer system.
- Designs, implements and maintains automated and manual systems.
- Installs, tests, maintains and documents computer programs that automate specific business processes.
- Works with users in the support of business applications.

#### Qualifications

- Bachelor's degree in Business or Information Technology-related field preferred
- 1 year direct related experience
- Project management, analysis, processing skills preferred
- SQL certification preferred

## Matching Military Occupations

This list identifies military occupations in the various services for both enlisted and officer career paths that are a possible match for Computer System Analyst.

MOC	MOC Title	Service	Career
30A	Information Operations Officer	Army	Officer
49A	Operations Research/Systems Analysis	Army	Officer
49W	Trained Operations Research/System Analysis (ORSA)	Army	Officer
49X	Untrained Operations Research/System Analysis (ORSA)	Army	Officer
51A	Systems Development	Army	Officer
51S	Research and Engineering	Army	Officer
70D	Health Services Systems Management	Army	Officer
0205	Master Analyst	Marine Corps	Officer
2805	Data/Communications Maintenance Officer	Marine Corps	Officer
5910	Aviation Radar Maintenance Officer	Marine Corps	Officer
5950	Air Traffic Control Systems Maintenance Officer	Marine Corps	Officer
8051	Operations Research Specialist	Marine Corps	Officer
8834	Technical Information Operations Officer	Marine Corps	Officer
8850	Operations Analyst	Marine Corps	Officer
8852	Defense Systems Analyst	Marine Corps	Officer
9634	Technical Information Operations Officer	Marine Corps	Officer
9650	Operations Analyst	Marine Corps	Officer
9651	Automatic Data Processing Intelligence Officer	Marine Corps	Officer
9652	Defense Systems Analyst	Marine Corps	Officer
0510	Basic Information Operations Staff Officer	Navy	Officer
2165	Designated Project Systems Integration Coordinator	Navy	Officer
2180	Preoperational Test and Evaluation Officer	Navy	Officer
2181	Operational Test and Evaluation Officer	Navy	Officer
5309	Computer Science	Navy	Officer
5707	Combat Systems - Software Design	Navy	Officer
6203	Computer Science and Systems Design	Navy	Officer
6470	Weapons Control Systems Project Officer (General)	Navy	Officer
6472	Weapons Control Systems Project Officer (Surface)	Navy	Officer
6582	Undersea Weapons Project Officer	Navy	Officer

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MOC	MOC Title	Service	Career
6717	Program Manager, Weapons Systems	Navy	Officer
7905	Ship Project Officer	Navy	Officer
9085	Operations Analyst	Navy	Officer
9110	AOC Director Combat Operations Officer	Navy	Officer
9140	AOC Operations - Offensive Operations Officer	Navy	Officer
9145	AOC Operations - Defensive Operations Officer	Navy	Officer
9161	AOC Operations - Special Operations Officer	Navy	Officer
9184	AOC Information Operations Staff Officer	Navy	Officer
9464	Ocean Systems Operations Officer	Navy	Officer
9690	Intelligence Support to CNO/CYBER	Navy	Officer
9710	ADP Programs Officer	Navy	Officer
9720	ADP Plans Officer	Navy	Officer
9735	Computer Systems Analyst	Navy	Officer
9740	Digital Computer System Programmer	Navy	Officer
9805	Tactical Information Warfare Officer (Surface)	Navy	Officer
9811	Tactical Information Warfare Officer (Subsurface)	Navy	Officer
9816	Tactical Information Warfare Officer (Air)	Navy	Officer
9820	Tactical Information Warfare Officer (Spec / Irreg Warfare)	Navy	Officer
9826	Information Warfare Officer (National)	Navy	Officer
9831	Information Warfare Officer (Coordinator)	Navy	Officer
9836	Information Warfare Officer (Planner)	Navy	Officer
9841	Information Warfare Officer (Staff)	Navy	Officer

## Data Engineer

Data Engineers oversee an organization's database infrastructure and are responsible for the integrity and availability of the data assets. Nationally, there were 333,442 postings for this occupational group with Chicago and San Francisco representing the two largest markets (16,082 and 12,807 postings respectively).

The demand for data-driven decision making has spiked over the past decade, the number of postings has grown 41% since 2010. This growth was even more rapid in Boston and Chicago (47% and 56%, respectively). Over the next decade, however, the BLS projects that future growth will be only 8% nationally (a statistic that warrants discussion with local employers), as certain urban areas (Boston and San Francisco) are forecasted to grow at a much higher rate (15% and 19%, respectively).

Boston and San Francisco see the greatest evidence of skill gaps for Data Engineers (with jobs remaining open for more than 40 days (while the national average is only 37 days, on par with the average for all IT categories). Salaries in Boston and San Francisco are also higher (20% greater than the national average of \$73,781).

### Posting Counts and Salary

	Jobs <sup>2</sup>	Projected Growth <sup>2</sup> (2012 - 2022)		Job Postings <sup>3</sup> (2014)	Growth <sup>3</sup> (2010 - 2014)	Average Salary <sup>3</sup>	Open <sup>3</sup>
<b>Nationally</b>	<b>324,680</b>	<b>8%</b>		<b>333,442</b>	<b>41%</b>	<b>\$73,781</b>	<b>37 Days</b>
Boston	7,480	15%		10,902	47%	\$87,765	40 Days
Chicago	18,030	12%		16,082	56%	\$84,506	37 Days
Las Vegas	2,130	9%		965	37%	\$68,394	35 Days
San Francisco	7,250	19%		12,807	41%	\$91,469	41 Days

This occupational category offers strong opportunities for middle skill workers (77,226 postings). Las Vegas has the greatest percentage of demand open to middle skill workers, with 30% of postings calling for someone with work experience of two years or less. Employers in San Francisco appear to have real difficulty filling Data Engineer roles with postings remaining open, on average, for 50 days (18 days longer than the national average).



## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>US</b>	<b>77,226</b>	<b>23%</b>	<b>\$62,286</b>	<b>32 Days</b>
Boston	2,436	22%	\$72,501	37 Days
Chicago	3,757	23%	\$72,540	38 Days
Las Vegas	293	30%	\$65,409	29 Days
San Francisco	2,753	21%	\$80,823	50 Days

## Top Skills

The following list of skills identifies required competencies, specified by employers, for Data Engineers.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
SQL / SQL Server	Data Analysis	Communication Skills
Oracle	Database Administration	Organizational Skills
UNIX / LINUX	Data Warehousing	Writing
Oracle PL / SQL	Extraction Transformation and Loading (ETL)	Microsoft Windows
SAS	Business Process	Problem Solving
JAVA	Data Management	Planning
SAP	Business Intelligence	Research
Microsoft SQL	Database Design	Project Management
SQL Server Reporting Service	Data Modeling	Troubleshooting
Transact - SQL	Business Systems Analysis	Customer Service

## Top Certifications

The requirement for certification in this occupational group (9%) is relatively low (compared to other IT roles). The following list shows the top certifications employers require for Data Engineers.

Top Certifications
Project Management Certification (e.g. PMP)
IT Infrastructure Library
Microsoft Certified Systems Engineer (MCSE)
Oracle Certification (e.g. Oracle Certified Associate)
Certified Information Systems Security Professional (CISSP)
Capability Model Maturity Integration (CMMI) Certification
Security +

## Top Titles

The following list shows the top job titles used to describe Data Engineer roles. These represent the job titles that students and job seekers should focus on when searching Data Engineer positions.

Top Titles
Data Analyst
Business Systems Analyst
Database Administrator
Oracle Database Administrator
SQL Database Administrator
SQL Developer / Database Developer
ETL Developer
Data Entry Specialist
Research Analyst
Business Intelligence Analyst

## Sample Job Posting

Overview
<p><b>Duties</b></p> <ul style="list-style-type: none"><li>• Participate in gathering user requirements and manages scope for Business Intelligence (BI) team using Agile's methodologies.</li><li>• Participate in the development of action plan(s), identification of tasks, and time frames for the projects that are assigned.</li><li>• Identifies task risks and impediments.</li></ul>
Position Specific Details
<p><b>Responsibilities</b></p> <ul style="list-style-type: none"><li>• Design, build and maintain BI Dashboards.</li><li>• Write basic T-SQL Data Manipulation Language Queries.</li><li>• Build and maintain technical solutions within the Business Intelligence framework, which includes but is not limited to, T-SQL (Stored Procedures, Views, user defined functions, etc.), Front-end reporting tools and New versions</li><li>• Perform unit testing, T-SQL, Front-end reporting tools</li><li>• Perform front end data validation comparing end user information to the original data source.</li><li>• Proactively work with team members to complete tasks as defined by scope, timeline, and budget.</li></ul> <p><b>Qualifications</b></p> <ul style="list-style-type: none"><li>• 1 year of technical experience Technical experience should include the following: Development with BI dashboard and visualization tools - Microsoft and Tableau preferred. Working with Relational Databases such as MS SQL Server. Writing SQL scripts. Requirements gathering and documentation and data validation</li><li>• Agile Software Development Life Cycle tools experience preferred</li><li>• Data Warehousing experience preferred</li><li>• Data Modeling experience preferred</li><li>• Microsoft SSIS or SSAS experience preferred</li><li>• Microsoft SharePoint experience preferred</li><li>• Available to provide on-call support 24/7 as needed</li></ul>

## Matching Military Occupations

This list identifies military occupations across military services for both enlisted and officer career paths which are a possible match for civilian Data Engineer roles.

MOC	MOC Title	Service	Career
1B411, 1B431, 1B451, 1B471	Cyberspace Defense Operations	Air Force	Enlisted
1B491	Cyberspace Superintendent	Air Force	Enlisted
2R091	Maintenance Data Systems Analysis Superintendent	Air Force	Enlisted
25B	Information Technology Specialist	Army	Enlisted
25N	Nodal Network Systems Operator-Maintainer	Army	Enlisted
25U 31U	Signal Support Systems Specialist	Army	Enlisted
275	Information Systems Technician	Coast Guard	Enlisted
0651	Data Systems Technician	Marine Corps	Enlisted
0652	Certification Authority Workstation (CAW) Operator	Marine Corps	Enlisted
0653	Defense Message System (DMS) Specialist	Marine Corps	Enlisted
0659	Data Chief	Marine Corps	Enlisted
0681	Information Security Technician	Marine Corps	Enlisted
0689	Computer Network Defense Specialist	Marine Corps	Enlisted
2542	Defense Message System (DMS) Specialist	Marine Corps	Enlisted
2735	Journeyman Networking Core	Marine Corps	Enlisted
2778	Mission Distribution System Operator	Marine Corps	Enlisted
2779	Information System Security Manager	Marine Corps	Enlisted
2780	Network Security Vulnerability Technician	Marine Corps	Enlisted
2781	Advanced Network Analyst	Marine Corps	Enlisted
2783	Submarine Local Area Network (SUBLAN) Technician	Marine Corps	Enlisted
2791	Information Systems Administrator (IAT II)	Marine Corps	Enlisted
6046	Aircraft Maintenance Administration Specialist	Marine Corps	Enlisted
6049	NALCOMIS Application Administrator/Analyst	Marine Corps	Enlisted
2299	Information Systems Technician Submarines Conversion	Navy	Enlisted
2710	Global Command and Control System-Maritime 4.X (GCCS-M 4.X) System Administrator	Navy	Enlisted
2720	GCCS-M System Administrator	Navy	Enlisted

MOC	MOC Title	Service	Career
2730	Naval Tactical Command Support System (NTCSS) II Manager	Navy	Enlisted
2765	Global Command and Control System-Maritime (4.1) Increment 2 System Administrator	Navy	Enlisted
2790	Information Systems Technician (IAT I)	Navy	Enlisted
4778	Fiber Optic Data Multiplex System (FODMS) Technician	Navy	Enlisted
6302	Similar to Automated Maintenance Environment Operator	Navy	Enlisted
6303	Optimized NALCOMIS System Administrator/Analyst OMA	Navy	Enlisted
6304	Optimized NALCOMIS Database Administrator/Analysis IMA	Navy	Enlisted
6694	Aviation Logistics Information Management System (ALIMS) Specialist	Navy	Enlisted
9305	Basic Digital Network Analysis	Navy	Enlisted
9306	Network Operations (NWO)	Navy	Enlisted
9307	Network Analysis and Reporting (NAR)	Navy	Enlisted
9308, 9309	Navy Interactive ON-NET Operator	Navy	Enlisted
CTM	Cryptologic Technician Maintenance	Navy	Enlisted
CTN	Cryptologic Technician Networks	Navy	Enlisted
IT	Information Systems Technician	Navy	Enlisted
ITS	Information Systems Technician Submarines	Navy	Enlisted
3999	Intelligence Specialist Basic	Navy Enlisted Codes and Navy Commissioned/Warrant Officer Billet Code	Enlisted
9190	Special Security Assistant	Navy Enlisted Codes and Navy Commissioned/Warrant Officer Billet Code	Enlisted
9556	Security Specialist	Navy Enlisted Codes and Navy Commissioned/Warrant Officer Billet Code	Enlisted

MOC	MOC Title	Service	Career
9720	Communications and Intelligence Specialists	Navy Enlisted Codes and Navy Commissioned/Warrant Officer Billet Code	Enlisted
6049	NALCOMIS Application Administrator/Analyst	Marine Corps	Enlisted
0031	Plans, Operations and Medical Intelligence	Navy	Officer
0205	Master Analyst	Marine Corps	Officer
2050	Mathematics Research Officer	Navy	Officer
2610	Management Analysis and Control Officer	Navy	Officer
2642	Maintenance and Material Management Data Engineer	Navy	Officer
2650	Knowledge Management Officers	Navy	Officer
49A	Operations Research/Systems Analysis	Army	Officer
49W	Trained Operations Research/System Analysis (ORSA)	Army	Officer
49X	Untrained Operations Research/System Analysis (ORSA)	Army	Officer
51A	Systems Development	Army	Officer
51S	Research and Engineering	Army	Officer
61A1, 61A1M, 61A1N, 61A1P, 61A1Q, 61A1R, 61A1S, 61A1T, 61A1V, 61A1W, 61A1Y, 61A1Z, 61A3, 61A3M, 61A3N, 61A3P, 61A3Q, 61A3R, 61A3S, 61A3T, 61A3V, 61A3W, 61A3Y, 61A3Z, 61A4,	Operations Research Analyst	Air Force	Officer

MOC	MOC Title	Service	Career
61A4M, 61A4N, 61A4P, 61A4Q, 61A4R, 61A4S, 61A4T, 61A4V, 61A4W, 61A4Y, 61A4Z	Operations Research Analyst	Air Force	Officer
7202	Air Command and Control Officer	Marine Corps	Officer
8051	Operations Research Specialist	Marine Corps	Officer
8694	Aviation Model Manager	Navy	Officer
86P0	Command and Control	Air Force	Officer
8825	Modeling and Simulation Officer	Marine Corps	Officer
8846	Data Systems Specialist	Marine Corps	Officer
8848	Management, Data Systems Officer	Marine Corps	Officer
8850	Operations Analyst	Marine Corps	Officer
8852	Defense Systems Analyst	Marine Corps	Officer
9085	Operations Analyst	Navy	Officer
9464	Ocean Systems Operations Officer	Navy	Officer
9465	Ocean Systems Watch Officer	Navy	Officer
9625	Modeling and Simulation Officer	Marine Corps	Officer
9646	Data Systems Specialist	Marine Corps	Officer
9648	Management, Data Systems Officer	Marine Corps	Officer
9650	Operations Analyst	Marine Corps	Officer
9651	Operations Research Specialist	Marine Corps	Officer
9652	Defense Systems Analyst	Marine Corps	Officer
9730	Data Base Management Officer	Navy	Officer
9755	Shipboard Nontactical Automatic Data Processing System Coordinator	Navy	Officer
9805, 9811, 9816, 9820	Tactical Information Warfare Officer	Navy	Officer
9826, 9831, 9836, 9841	Information Warfare Officer	Navy	Officer

## Health Information Specialist

Health Information Specialists are responsible for managing all aspects of health data and information. They use information technology to drive improvements in the efficiency and quality of health care. One segment of this group, the Health Information Technician represent a common entry-point into the profession, with technicians being responsible for organizing medical information and patient files.

The occupational group is a particularly strong opportunity for middle skill jobseekers, with 47% of postings open to jobseekers with 2 years or less experience. Average advertised salaries for health information workers are at the lower end of the salary range (\$47,100), although salaries can be significantly higher in some locations, such as Boston.

Nationally, Health Information Specialist jobs remained open for 32 days, but this can vary significantly by location. In Chicago and San Francisco, for example, these jobs remain open for 35 days; by contrast, they remain open for only 26 days in Las Vegas.

### Posting Counts and Salary

	<b>Jobs <sup>2</sup></b>	<b>Projected Growth <sup>2</sup></b> (2012 - 2022)		<b>Job Postings <sup>3</sup></b> (2014)	<b>Growth <sup>3</sup></b> (2010 - 2014)	<b>Average Salary <sup>3</sup></b>	<b>Open <sup>3</sup></b>
<b>Nationally</b>	<b>184,740</b>	<b>22%</b>		<b>89,047</b>	<b>70%</b>	<b>\$47,100</b>	<b>32 Days</b>
Boston	N/A	18%		1,681	41%	\$61,941	31 Days
Chicago	5,220	12%		3,186	88%	\$47,335	35 Days
Las Vegas	1,250	19%		523	23%	\$41,976	26 Days
San Francisco	2,120	21%		1,323	40%	\$54,834	35 Days

Health Information Specialist roles offer a strong opportunity both nationally, and in each of the urban areas specified, for entry-level professions (40% of all job postings require middle skills).



## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	<b>41,460</b>	<b>47%</b>	<b>\$38,509</b>	<b>30 Days</b>
Boston	642	38%	\$40,094	27 Days
Chicago	1,311	41%	\$42,174	33 Days
Las Vegas	223	43%	N/A	24 Days
San Francisco	527	40%	\$38,071	27 Days

## Top Skills

The process of collecting, organizing, storing, retrieving and analyzing patient information in a manner consistent with regulations requires specialized knowledge and skills. Job seekers are required to have a working knowledge of, coding systems (e.g. ICD-9-CM), and electronic health records software such as EPIC. Some roles involve interactions with patients and/or insurance companies, requiring strong patient care and communication.

The following list of skills identifies required competencies for Health IT Specialists.

Top Specialized Skills	Top Software Skills	Top Baseline Skills
Medical Coding – ICD-9-CM, CPT-4, HCPCS	Epic Systems	Communication Skills
Health Information Technology	Microsoft Excel	Organizational Skills
Medical Records	Microsoft Office	Writing
Epic Systems	SQL	Microsoft Excel
Knowledge of Health Information Management (HIM)	Medical Encoder	Project Management
Patient Care	Meditech	Research
Data Entry	Microsoft Visio	Problem Solving
Medical Terminology	SAS	Microsoft Office
Medical Billing	Microsoft Project	Customer Service
Data Analysis	ITIL	Detail-Oriented

## Top Certifications

Although professional certification is not required in order to become a health information technician, it is preferred by many employers, (32% of postings require a certification). Certifications, such as Registered Health Information Technician (RHIT) and/or Certified Professional Code, can be earned from several organizations. The following list shows the top certifications employers require for Health Information Specialists.

Top Certifications
Registered Health Information Technician
Registered Health Information Administrator
Certified Professional Coder
Certified Coding Specialist
Project Management Certification (e.g. PMP)
EPIC Certification
Certified Professional Coder-Hospital Outpatient
Medical Billing And Coding Certification
Certified Coding Associate
Acute Care Certification

## Top Titles

The following list shows the top job titles used to describe Health Information Specialist roles. These represent the job titles that students and job seekers should focus on when searching Health Information Specialist positions.

Top Titles
Medical Biller
Medical Records Clerk
Medical Billing Specialist
Medical Coder
Medical Records Technician
Release Of Information Specialist I
Coder
EPIC Analyst
Epic Ambulatory Build Analyst
Coding Specialist

## Sample Job Posting

Overview
<p><b>Description</b></p> <p>The Coder is a key member of the Physician Practice and provides billing and coding expertise to the physician and practice management.</p>
Position Specific Details
<p><b>Responsibilities</b></p> <ul style="list-style-type: none"><li>• Receives and reviews charge documents from the clinic and/or hospital.</li><li>• Ensures charge information provided is correct and accurate.</li><li>• Abstracts CPT-4, HCPCS II, and ICD-9-CM from medical records.</li><li>• Charge entry into billing system in a timely manner</li><li>• Works in conjunction with A/R team on follow up and resolution of coding related denials and rejections.</li><li>• Responsible for maintaining current knowledge of coding guidelines and relevant federal regulations through the use of current CPT-4, HCPCS II, and ICD-9/ICDD-10 materials, Federal Register, and other pertinent materials.</li></ul>
<p><b>Qualifications</b></p> <ul style="list-style-type: none"><li>• Knowledge of eCW billing system and/or related billing system.</li><li>• Knowledge of medical terminology.</li><li>• Knowledge of coding including CPT-4, HCPCS II and ICD-9-CM.</li><li>• Skill in organization.</li><li>• Knowledge of specialty medical practices.</li><li>• Ability to read and understand an EOB.</li><li>• Must be detail-oriented and able to meet targeted deadlines.</li><li>• Knowledge of anatomy and physiology preferred.</li></ul>
<p><b>Credentials</b></p> <ul style="list-style-type: none"><li>• Certified Coding Specialist (CCS) through governing body AHIMA</li><li>• Certified Coding Specialist - Physician (CCS-P) through governing body AHIMA</li><li>• Registered Health Information Technician - RHIT through governing body AHIMA</li><li>• Registered Health Information Administrator - RHIA through governing body AHIMA</li><li>• Certified Professional Coder - (CPC®) through governing body AAPC</li><li>• Certified Professional Coder - Hospital (CPC-H®) through governing body AAPC</li></ul>
<p><b>Experience</b></p> <ul style="list-style-type: none"><li>• Minimum of one year of coding and/or billing experience in a healthcare setting is required.</li></ul>

## Matching Military Occupations

This list identifies military occupations in the various services for both enlisted and officer career paths that are a possible match for Health Information Specialist.

MOC	MOC Title	Service	Career
4A01x	Health Services Management	Air Force	Enlisted
4C01x	Mental Health Service	Air Force	Enlisted
4D0x1	Diet Therapy	Air Force	Enlisted
4H0x1	Cardiopulmonary Laboratory	Air Force	Enlisted
4J012x,4J032x,4J052x	Physical Medicine	Air Force	Enlisted
4M011,4M071	Aerospace and Operational Physiology	Air Force	Enlisted
4N011x,4N031x,4N051x,4N071x	Aerospace Medical Service	Air Force	Enlisted
4N111x,4N131x,4N151x,4N171x	Surgical Service	Air Force	Enlisted
4P0x1	Pharmacy	Air Force	Enlisted
4R011x,4R031x,4R051x,4R071x	Diagnostic Imaging	Air Force	Enlisted
4V0x1	Ophthalmic	Air Force	Enlisted
4Y0x1	Dental Assistant/Laboratory	Air Force	Enlisted
4Y0x1H	Dental Assistant Hygienist	Air Force	Enlisted
68G, 71G	Patient Administration Specialist	Army	Enlisted
870	Health Services Technician	Coast Guard	Enlisted
890	Health Services – Dental	Coast Guard	Enlisted
8402	Submarine Force Independent Duty Corpsman	Navy	Enlisted
8403	Fleet Marine Force Reconnaissance Independent Duty Corpsman	Navy	Enlisted
8425	Surface Force Independent Duty Corpsman	Navy	
8427	Fleet Marine Force Reconnaissance Corpsman	Navy	Enlisted
8493	Medical Deep Sea Diving Technician	Navy	Enlisted
8494	Deep Sea Diving Independent Duty Corpsman	Navy	Enlisted
8499	Hospital Corpsman Basic	Navy	Enlisted
9519, 9522	Navy Drug and Alcohol Counselor / Intern	Navy	Enlisted
9730	Medical and Dental Specialists	Navy	Enlisted
00DT	Dental Tracking NEC	Navy	Enlisted
HM	Hospital Corpsman	Navy	Enlisted
HN	Hospitalman	Navy	Enlisted
HR	Hospitalman Recruit	Navy	Enlisted

## Information Security Analyst

Information Security Analysts assess the information security risks facing organizations, and protect an organization's computing assets (networks and computer systems). Information security analysts are becoming increasingly critical to organizations as cybersecurity attacks increase in frequency and sensitive information becomes more digital. Employment in the occupational group is forecasted to grow 36% through to 2022 (faster than any other IT occupation group).

The demand for Information Security Analysts appears to be outstripping supply (most analysts classify this occupational group as rapidly emerging). The average posting duration is 38 days (longer than most other IT job categories) and in certain markets the shortage appears to be especially severe (Boston and San Francisco both recorded average job posting durations of well over 40 days).

### Posting Counts and Salary

	<b>Jobs <sup>2</sup></b>	<b>Projected Growth <sup>2</sup></b> (2012 – 2022)		<b>Job Postings <sup>3</sup></b> (2014)	<b>Growth <sup>3</sup></b> (2010 – 2014)	<b>Average Salary <sup>3</sup></b>	<b>Open <sup>3</sup></b>
<b>Nationally</b>	<b>80,180</b>	<b>36%</b>		<b>58,021</b>	<b>92%</b>	<b>\$90,669</b>	<b>38 Days</b>
Boston	2,430	39%*		1,794	154%	\$107,626	43 Days
Chicago	2,230	30%*		2,442	214%	\$95,311	38 Days
Las Vegas	240	N/A		259	107%	\$74,887	34 Days
San Francisco	1,930	40%*		1,673	118%	\$109,123	46 Days

Opportunities for middle skill Information Security Analysts are limited, with just a few hundred job postings open to workers in each of the locations examined. Moreover, employers do not appear to have difficulty filling these positions, with posting durations for middle skill jobs lower than the national average for all jobs in most urban areas (San Francisco being the sole exception).

The career pathway for Information Security Analysts appears to begin in other occupational groups (Computer System Analysts, Network Support Specialists, User Support Specialists) where information security is a desirable, but not at present, required skill. Workers in these occupational groups can later, with additional education and experience, migrate into the information security career pathway.

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	8,702	15%	\$84,336	31 Days
Boston	294	16%	\$101,389	30 Days
Chicago	353	14%	\$89,667	33 Days
Las Vegas	42	16%	N/A	N/A
San Francisco	162	10%	\$81,300	40 Days

## Top Skills

Information Security Analysts need a comprehensive knowledge of the systems and networks that they are tasked with protecting, as well as strong problem-solving and analytical skills. Given the importance of this role, they often interact directly with senior executives and are required to possess strong communication skills.

The following list of skills identifies required competencies, specified by employers, for Information Security Analysts.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
LINUX / UNIX	Information Security	Communication Skills
Cisco	Firewalls	Organizational Skills
Transmission Control Protocol / Internet Protocol (TCP / IP)	Network Security	Writing
Virtual Private Networking (VPN)	Cryptography	Microsoft Windows
JAVA	Information Assurance	Problem Solving
Oracle	System and Network Configuration	Planning
SQL / SQL Server	Network Engineering	Research
PERL	HIPAA	Project Management
Python	System Administration	Troubleshooting
Domain Name System (DNS)	Switches	Customer Service

## Top Certifications

The requirement for certification (60%) is higher in information security than in many other IT occupational groups..

The following list shows the top certifications employers are demanding for Information Security Analyst roles.

Top Certifications
Certified Information Systems Security Professional (CISSP)
Certified Information Systems Auditor (CISA)
Certified Information Security Manager (CISM)
Cisco Certified Network Associate (CCNA)
Security+
Cisco Certified Network Professional (CCNP)
GIAC Security Essentials (GCE)
GIAC Certified Incident Handler (GCIH)
Project Management Certification (E.G. PMP)
Microsoft Certified Systems Engineer (MCSE)

## Top Titles

The following list shows the top job titles employers use to describe Information Security Analyst roles. These represent the job titles that students and job seekers should focus on when searching Information Security Analyst positions.

Top Titles
Security Engineer
Information Security Analyst
Network Security Engineer
IT Security Analyst
Security Analyst
Senior Security Engineer
Information Security Engineer
Security Architect
Information Security Specialist
Information Assurance Engineer

## Sample Job Posting

### Position Specific Details

#### Responsibilities

- Responsible for supporting the initiatives of the corporate information security program and coordinating with the network and infrastructure teams
- Significant, hands-on, tactical approach to the operational aspects of information security
- Forensic examination and reporting of virus / malware infections, data breach, or policy violation incidents
- Monitor and respond to alerts from key security technologies and other internal sources
- Research emerging threats, evaluating likelihood of occurrence, and controls to mitigate them
- Automating manual processes, assisting with creation and maintenance of Runbooks / Service Catalogs, etc.
- Identification of vulnerabilities with the Bank's environment and oversight of associated remediation activities
- Support employees with information security questions

#### Qualifications

- College degree in Computer Science; Master's degree preferred
- 1-2 years information security experience
- Experience with SIEM products, vulnerability scanners, firewalls, network devices, and intrusion detection systems
- Information security event analysis experience
- Regular expression and/or basic programming skills
- Strong knowledge of operating systems and networking
- Excellent analytical, problem-solving, and critical thinking skills
- Strong verbal and written communication skills
- Strong presentation skills
- Applicable certifications a plus (GSEC, GSNA, CISSP)



## Matching Military Occupations

This list identifies military occupations in the various services for both enlisted and officer career paths that are a possible match for Information Security Analyst.

MOC	MOC Title	Service	Career
275	Information Systems Technician	Coast Guard	Enlisted
6049	NALCOMIS Application Administrator/Analyst	Marine Corps	Enlisted
9556	Security Specialist	Navy	Enlisted
17C0	Cyberspace Operations Commander	Air Force	Officer
17D1x, 17D3x, 17D4x	Cyberspace Operations	Air Force	Officer
140A	Command and Control Systems Integrator	Army	Officer
24A	Telecommunications Systems Engineer	Army	Officer
24X	Designated Telecommunications Systems Engineer	Army	Officer
250A	Telecommunications Technician	Army	Officer
254A	Signal Systems Support Technician	Army	Officer
255S	Information Protection Technician	Army	Officer
25A	Signal, General	Army	Officer
290A	Electronic Warfare Technician	Army	Officer
29A	Electronic Warfare Officer	Army	Officer
352N	Signals Intelligence Analysis Technician	Army	Officer
352S	Signals Collection Technician	Army	Officer
35G	Signal Intelligence/Electronic Warfare	Army	Officer
0206	Signal Intelligence/Ground Electronic Warfare Officer	Marine Corps	Officer
0602	Communications Officer	Marine Corps	Officer
0603	Command, Control, Communications, Computers and Intelligence (C4I) Planner Officer	Marine Corps	Officer
0610	Telecommunication Systems Engineering Officer	Marine Corps	Officer
0620	Tactical Communications Planning and Engineer Officer	Marine Corps	Officer
0640	Spectrum Management Officer	Marine Corps	Officer
2602	Signals Intelligence/Electronics Warfare Officer	Marine Corps	Officer
2802	Electronics Maintenance Officer (Ground)	Marine Corps	Officer
8858	Command, Control, Communications, Computers and Intelligence (C4I) Officer	Marine Corps	Officer
9650	Electronic Intelligence Officer	Marine Corps	Officer
9658	Command, Control, Communications, Computers and Intelligence (C4I) Officer	Marine Corps	Officer
2748	Security Manager, Information Security Program	Navy	Officer
9046	Staff Electronic Warfare Officer	Navy	Officer
9282	Ship's Electronic Warfare Officer	Navy	Officer
9404	Tactical Deception Plans Officer	Navy	Officer
9510	Communications System Center Director	Navy	Officer
9512	Communications System Current Ops Manager	Navy	Officer

BATEC National Center of Excellence

MOC	MOC Title	Service	Career
9515	Communications Plans & Operations Officer	Navy	Officer
9517	Communication Security Officer	Navy	Officer
9523	Joint Interface Control Officer	Navy	Officer
9525	Communication Watch Officer	Navy	Officer
9530	Cryptoboard Officer	Navy	Officer
9543	Director of Communications	Navy	Officer
9560	Satellite Communications Officer	Navy	Officer
9575	Circuit Control Officer	Navy	Officer
9582	Information Systems Officer	Navy	Officer
9590	Staff Communications Officer	Navy	Officer
9595	Communications Traffic Officer	Navy	Officer
9690	Intelligence Support to CNO/CYBER	Navy	Officer
9781	ADP Systems Security Officer	Navy	Officer
2748	Security Manager, Information Security Program	Navy	Officer

## Network Support Specialist

Network Support Specialists analyze, test, troubleshoot, evaluate, and maintain an organization's computer networking systems and assets. Nationally, there were 14,152 postings for Network Support Specialists. Boston and Chicago were the urban areas with the largest demand (452 and 675 postings respectively).

Demand for Network Support Specialists shows a steady upward trend (growing 27% from 2010), although slightly less than other IT roles. Certain urban areas (Chicago and Las Vegas) experienced higher growth (81% and 97% respectively), while certain other areas (Boston) experienced lower growth (23%).

Network Support Specialists have an average posted salary of \$65,723, and an average posting duration of 37 days (the same as the average across all IT career areas). Certain urban areas (Boston) appear to have an acute shortage of talent, as the posting duration is much higher (50 days).

### Posting Counts and Salary

	Jobs <sup>2</sup>	Projected Growth <sup>2</sup> (2012 – 2022)		Job Postings <sup>3</sup> (2014)	Growth <sup>3</sup> (2010 – 2014)	Average Salary <sup>3</sup>	Open <sup>3</sup>
<b>Nationally</b>	<b>174,490</b>	<b>7%</b>		<b>14,152</b>	<b>27%</b>	<b>\$65,723</b>	<b>37 Days</b>
Boston	3,650	23%		452	23%	\$68,901	50 Days
Chicago	3,620	20%		675	81%	\$59,328	40 Days
Las Vegas	440	23%		71	97%	\$64,256	NA
San Francisco	4,590	32%		353	34%	\$87,457	33 Days

The opportunity for middle skill employment for Network Support Specialists is modest with 17% of the total postings open to workers with two years or less experience. Certain urban areas (Las Vegas and San Francisco) are even more restrictive (7% and 14% respectively). Network Support Specialists require a mix of skills that cut across multiple IT disciplines, and the opportunities which do exist can serve as strong starting points for workers looking to advance in a number of IT career areas. One of the strongest advancement opportunities for Network Support Specialists is in the rapidly growing field of CyberSecurity, where the networking, security, and data management skills required in networking can be applied to building and maintaining secure IT infrastructure.

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	<b>2,362</b>	<b>17%</b>	<b>\$62,524</b>	<b>33 Days</b>
Boston	76	17%	\$44,997	NA
Chicago	116	17%	\$42,669	NA
Las Vegas	5	7%	NA	NA
San Francisco	48	14%	NA	NA

## Top Skills

The following list of skills identifies required competencies, specified by employers, for Network Support Specialists.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
Microsoft Windows	Technical Support	Troubleshooting
Cisco	Network Support	Communication Skills
Microsoft Office	Software Installation	Customer Service
LINUX	Repair	Problem Solving
Microsoft Excel	System and Network Configuration	Writing
Transmission Control Protocol / Internet Protocol (TCP / IP)	Wide Area Network (WAN)	Organizational Skills
SQL	Switches	Microsoft Windows
UNIX	Telecommunications	Microsoft Office
Domain Name System (DNS)	Firewalls	Planning
Oracle	Network Engineering	Project Management

## Top Certifications

The requirement for certification in this occupational group (23%) is among the highest of the occupational groups studied. The following list shows the top certifications employers are demanding for Network Support Specialist roles.

Top Certifications
Certified Information Systems Security Professional (CISSP)
Project Management Certification (E.G. PMP)
Microsoft Certified Systems Engineer (MCSE)
Certified Information Systems Auditor (CISA)
Cisco Certified Network Associate
Registered Health Information Technician
Registered Health Information Administrator
Certified Professional Coder
Certified A+ Technician
Network+ Certified

## Top Titles

The following list shows the top job titles employers use to describe Network Support Specialist roles. These represent the job titles that students and job seekers should focus on when searching Network Support Specialist positions.

Top Titles
Customer Support Engineer
Customer Engineer
Systems Support Specialist
Network Support Engineer
Customer Service Engineer
Network Support Specialist
Systems Support Engineer
Customer Engineer II
Network Support Analyst
Network Consultant

## Sample Job Posting

This is a sample job posting for a Network Support Specialist position:

### Overview

The Network Support Specialist provides direct support to [REDACTED]. In this role, you will work with the client to resolve customer problems or incidents until the situation has been resolved to the customer's satisfaction and/or in compliance with agreed upon Service Level Agreements. Under [REDACTED] direction, you may work independently or assist Customer Engineers to support high complexity equipment in a networking environment. Primary services include hardware maintenance & repairs, upgrades, installation services, network management, multi-vendor maintenance & data center support.

### Position Specific Details

#### Responsibilities

- Perform hardware break-fix, upgrades, installation, maintenance and repairs.
- Perform work on medium-high complexity equipment.
- Provide continuity of customer operations and high levels of customer satisfaction.
- Manage customer incidents as assigned.
- Build working relationships with customers and ensure a high level of customer satisfaction.
- May provide technical support to Field Technicians (both NCR and non-NCR) as directed.
- Assists in site preparation including cable installation, staging and standard testing of equipment
- Project work and other jobs according to statement of work.
- Work in accordance with customer's policies, processes and procedures.
- Ability to make decisions and solve problems using sound judgment and experience
- Represent [REDACTED] in a manner that reflects positively on the image and reputation of the respective companies.

#### Qualifications

- Must be authorized to work in the U.S.
- Must have a valid driver's license
- Must pass comprehensive background check including credit check, criminal, driving record, and drug screen.
- Must have the ability to carrying and lifting tool kit/parts of varying weights (1- 50 lbs.)
- Cisco Router/Switch (CTRS)/Cisco UCS (CCTDC) or higher Cisco certification
- 2 year degree in electronics or computer technology
- At least 2 years of hands-on networking repair experience in a customer field environment Experience supporting Cisco UCS products

## Matching Military Occupations

This list identifies military occupations across military services for both enlisted and officer career paths which are a possible match for civilian Network Support Specialist roles.

MOC	MOC Title	Service	Career
0206	Signal Intelligence/Ground Electronic Warfare Officer	Marine Corps	Officer
0510	Basic Information Operations Staff Officer	Navy	Officer
0602	Communications Officer	Marine Corps	Officer
0603	Command, Control, Communications, Computers and Intelligence (C4I) Planner Officer	Marine Corps	Officer
0605	Cyberspace Network Operations Officer	Marine Corps	Officer
0610	Telecommunication Systems Engineering Officer	Marine Corps	Officer
0620	Tactical Communications Planning and Engineer Officer	Marine Corps	Officer
0640	Spectrum Management Officer	Marine Corps	Officer
2602	Signals Intelligence/Electronics Warfare Officer	Marine Corps	Officer
2748	Security Manager, Information Security Program	Navy	Officer
2802	Electronics Maintenance Officer (Ground)	Marine Corps	Officer
2805	Data/Communications Maintenance Officer	Marine Corps	Officer
5910	Aviation Radar Maintenance Officer	Marine Corps	Officer
5950	Air Traffic Control Systems Maintenance Officer	Marine Corps	Officer
8834	Technical Information Operations Officer	Marine Corps	Officer
8858	Command, Control, Communications, Computers and Intelligence (C4I) Officer	Marine Corps	Officer
9046	Staff Electronic Warfare Officer	Navy	Officer
9184	AOC Information Operations Staff Officer	Navy	Officer
9282	Ship's Electronic Warfare Officer	Navy	Officer
9510	Communications System Center Director	Navy	Officer
9512	Communications System Current Ops Manager	Navy	Officer
9515	Communications Plans & Operations Officer	Navy	Officer
9517	Communication Security Officer	Navy	Officer
9523	Joint Interface Control Officer	Navy	Officer
9524	Joint Data Network Operations Officer	Navy	Officer
9525	Communication Watch Officer	Navy	Officer
9530	Cryptoboard Officer	Navy	Officer
9543	Director of Communications	Navy	Officer
9560	Satellite Communications Officer	Navy	Officer
9575	Circuit Control Officer	Navy	Officer
9582	Information Systems Officer	Navy	Officer
9590	Staff Communications Officer	Navy	Officer
9595	Communications Traffic Officer	Navy	Officer
9634	Technical Information Operations Officer	Marine Corps	Officer
9650	Electronic Intelligence Officer	Marine Corps	Officer

MOC	MOC Title	Service	Career
9658	Command, Control, Communications, Computers and Intelligence (C4I) Officer	Marine Corps	Officer
9705	ADP System Director	Navy	Officer
9745	ADP Systems Maintenance Officer	Navy	Officer
9750	ADP Customer Liaison Officer	Navy	Officer
9781	ADP Systems Security Officer	Navy	Officer
98xx	Tactical Information Warfare Officer	Navy	Officer
98xx	Information Warfare Officer	Navy	Officer
9890	Computer Network Operations	Navy	Officer
9891	Computer Network Capability Development	Navy	Officer
131A	Field Artillery Targeting Technician	Army	Officer
140A	Command and Control Systems Integrator	Army	Officer
140E	Air and Missile Defense (AMD) Systems Tactician / Technician	Army	Officer
17C0	Cyberspace Operations Commander	Air Force	Officer
17D1x	Cyberspace Operations	Air Force	Officer
24A	Telecommunications Systems Engineer	Army	Officer
24X	Designated Telecommunications Systems Engineer	Army	Officer
250A	Telecommunications Technician	Army	Officer
250N	Network Management Technician	Army	Officer
251A	Information Systems Technician	Army	Officer
254A	Signal Systems Support Technician	Army	Officer
255A	Information Services Technician	Army	Officer
255N	Network Management Technician	Army	Officer
255S	Information Protection Technician	Army	Officer
255Z	Senior Network Operations Technician	Army	Officer
25A	Signal, General	Army	Officer
290A	Electronic Warfare Technician	Army	Officer
29A	Electronic Warfare Officer	Army	Officer
30A	Information Operations Officer	Army	Officer
352N	Signals Intelligence Analysis Technician	Army	Officer
352S	Signals Collection Technician	Army	Officer
35G	Signal Intelligence/Electronic Warfare	Army	Officer
51A	Systems Development	Army	Officer
53A	Information Systems Management	Army	Officer
ITS	Information Systems Technician Submarines	Navy	Enlisted
IT	Information Systems Technician	Navy	Enlisted
CTN	Cryptologic Technician Networks	Navy	Enlisted
CTM	Cryptologic Technician Maintenance	Navy	Enlisted
31W	Telecommunications Operations Chief	Army	Enlisted
31U	Signal Support Systems Specialist	Army	Enlisted
31T	Satellite/Microwave Systems Chief	Army	Enlisted
2R0xx	Maintenance Management Analysis	Air Force	Enlisted
25X	Chief Signal NCO	Army	Enlisted



MOC	MOC Title	Service	Career
25W	Telecommunications Operations Chief	Army	Enlisted
25U	Signal Support Systems Specialist	Army	Enlisted
25T	Satellite/Microwave Systems Chief	Army	Enlisted
25N	Nodal Network Systems Operator-Maintainer	Army	Enlisted
25B	Information Technology Specialist	Army	Enlisted
1N490	Fusion Analysis Superintendent	Air Force	Enlisted
1B491	Cyberspace Superintendent	Air Force	Enlisted
1B4xx	Cyberspace Defense Operations	Air Force	Enlisted
1B000	Cyberspace Manager	Air Force	Enlisted
18E	Special Forces Communications Sergeant	Army	Enlisted
14TM	TRIDENT I/II Radio Frequency (RF) Equipment Maintenance Technician	Navy	Enlisted
14CM	SSN Radio Frequency (RF) Equipment Technician	Navy	Enlisted
0CTO	Cryptologic Technician Communications (CTO) Tracking NEC	Navy	Enlisted
9556	Security Specialist	Navy Enlisted Codes and Navy Commissioned/Warrant Officer Billet Code	Enlisted
9308	Navy Interactive ON-NET Operator	Navy	Enlisted
9307	Network Analysis and Reporting (NAR)	Navy	Enlisted
9306	Network Operations (NWO)	Navy	Enlisted
9305	Basic Digital Network Analysis	Navy	Enlisted
6694	Aviation Logistics Information Management System (ALIMS) Specialist	Navy	Enlisted
6304	Optimized NALCOMIS Database Administrator/Analysis IMA	Navy	Enlisted
6303	Optimized NALCOMIS System Administrator/Analyst OMA	Navy	Enlisted
6049	NALCOMIS Application Administrator/Analyst	Marine Corps	Enlisted
6046	Aircraft Maintenance Administration Specialist	Marine Corps	Enlisted
5908	Tool & Equipment Technician	Navy	Enlisted
4778	Fiber Optic Data Multiplex System (FODMS) Technician	Navy	Enlisted
4747	Broadcast Engineering Technician	Navy	Enlisted
4746	Closed Circuit TV Technician	Navy	Enlisted
4743	Integrated Launch and Recovery Television Surveillance (ILARTS) System Maintenance Technician	Navy	Enlisted
4741	Basic Integrated Voice Communication Network (IVCN) Maintenance Technician	Navy	Enlisted
4740	Advanced Integrated Voice Communication Network (IVCN) Maintenance Technician	Navy	Enlisted
4713	MarCom Integrated Voice Communication System (IVCS) Technician	Navy	Enlisted
4712	Integrated Voice Communications Technician	Navy	Enlisted
4709	Mission Briefing System AN/SXQ-8 Maintenance Technician	Navy	Enlisted
2862	Electronics Maintenance Technician	Marine Corps	Enlisted

MOC	MOC Title	Service	Career
2848	Tactical Remote Sensor System (TRSS) Maintainer	Marine Corps	Enlisted
2847	Telephone Systems/Personal Computer Repairer	Marine Corps	Enlisted
2834	Digital Wideband Technician	Marine Corps	Enlisted
2831	Digital Wideband Repairer	Navy	Enlisted
2823	Technical Control Chief	Marine Corps	Enlisted
2821	Technical Controller	Marine Corps	Enlisted
2791	Information Systems Administrator (IAT II)	Marine Corps	Enlisted
2790	Information Systems Technician (IAT I)	Navy	Enlisted
2783	Submarine Local Area Network (SUBLAN) Technician	Marine Corps	Enlisted
2781	Advanced Network Analyst	Marine Corps	Enlisted
2780	Network Security Vulnerability Technician	Marine Corps	Enlisted
2779	Information System Security Manager	Marine Corps	Enlisted
2778	Mission Distribution System Operator	Marine Corps	Enlisted
2765	Global Command and Control System-Maritime (4.1) Increment 2 System Administrator	Navy	Enlisted
2735	Journeyman Networking Core	Marine Corps	Enlisted
2730	Naval Tactical Command Support System (NTCSS) II Manager	Navy	Enlisted
2720	GCCS-M System Administrator	Navy	Enlisted
2710	Global Command and Control System-Maritime 4.X (GCCS-M 4.X) System Administrator	Navy	Enlisted
2542	Defense Message System (DMS) Specialist	Marine Corps	Enlisted
2379	Transmission System Technician	Navy	Enlisted
2354	FLTSATCOM (SSIXS-OPCONCEN) Operator	Navy	Enlisted
2299	Information Systems Technician Submarines Conversion	Navy	Enlisted
1494	LHD Class Radio Communications System Maintenance Technician	Navy	Enlisted
1493	Tactical Support Communications (TSCOMM) Replacement Program Maintenance Technician	Navy	Enlisted
1465	Special Maintenance (AN/GSC-52(V), GSC-39, FSC-78/79 SHF Satellite Terminal) Technician	Navy	Enlisted
1460	Limited Communications Security (COMSEC) Maintenance Technician	Navy	Enlisted
1459	Mobile Maintenance System Technician	Navy	Enlisted
1458	VERDIN/ISABPS Communications System Technician	Navy	Enlisted
1452	NAVMACS (V)3 Shipboard Maintenance Technician	Navy	Enlisted
1433	Super High Frequency (SHF) Satellite Communications (SATCOM) Maintenance Technician	Navy	Enlisted
1430	AN/USC-38(V) 2,3 Maintenance Technician	Navy	Enlisted
1429	Flight Deck Communications System (FDCS) Maintenance Technician	Navy	Enlisted
1428	Small Combatant Communications Electronic Subsystem Technician	Navy	Enlisted
1425	Communications Equipment (WSC-3/UHF DAMA) Technician	Navy	Enlisted
1424	Communications Equipment (SRQ-4) Technician	Navy	Enlisted

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MOC	MOC Title	Service	Career
1420	Surface HF Communications Systems Maintenance Technician	Navy	Enlisted
1419	Electromagnetic Compatibility Technician	Navy	Enlisted
1410	AN/SRC-55(V) HYDRA Technician	Navy	Enlisted
1406	AN/WSC-6(V)9 Combatant Super High Frequency (SHF) Satellite Communications (SATCOM) Maintenance	Navy	Enlisted
1405	AN/WSC-6(V)7 Combatant Super High Frequency (SHF) Satellite Communications (SATCOM) Maintenance	Navy	Enlisted
1404	AN/WSC-8 Super High Frequency (SHF) Satellite Communications (SATCOM) Maintenance	Navy	Enlisted
1403	AN/WSC-6(V)5 Super High Frequency (SHF) Satellite Communications (SATCOM) Maintenance	Navy	Enlisted
1319	SSGN Tactical TOMAHAWK Weapon System (TTWCS) Maintenance Technician	Navy	Enlisted
0699	Communications Chief	Marine Corps	Enlisted
0689	Computer Network Defense Specialist	Marine Corps	Enlisted
0681	Information Security Technician	Marine Corps	Enlisted
0659	Data Chief	Marine Corps	Enlisted
0653	Defense Message System (DMS) Specialist	Marine Corps	Enlisted
0652	Certification Authority Workstation (CAW) Operator	Marine Corps	Enlisted
0651	Data Systems Technician	Marine Corps	Enlisted
0629	Radio Chief	Navy	Enlisted
275	Information Systems Technician	Coast Guard	Enlisted

## Software Developer

Software Developers design, develop, modify and test the code that undergirds various operating systems and applications. They constitute the largest IT occupational group, with close to 700,000 US job postings in 2014. Robust growth is forecasted for this occupational group over the next half-decade with the highest concentration in the tech hubs of Boston, Chicago and San Francisco.

Software Developers require a high degree of technical skills, and are well compensated for those skills. The average advertised salary, nationally, was over \$95,000. In San Francisco, the average salary is over \$115,000. Job postings for middle skill opportunities average over \$80,000 in all of the urban areas covered by this report.

Openings in this occupational group are extremely difficult to fill, even with the high levels of compensation. Job postings remain online for 43 days on average (6 days longer than the average for IT jobs overall), the longest of any other career area profiled in this report. Middle skill positions remain open an average of 40 days, following this same trend.

### Posting Counts and Salary

	<b>Jobs <sup>2</sup></b>	<b>Projected Growth <sup>2</sup></b> (2012 – 2022)		<b>Job Postings <sup>3</sup></b> (2014)	<b>Growth <sup>3</sup></b> (2010 – 2014)	<b>Average Salary <sup>3</sup></b>	<b>Open <sup>3</sup></b>
<b>US</b>	<b>1,068,870</b>	<b>22%</b>		<b>681,482</b>	<b>29%</b>	<b>\$96,079</b>	<b>43 Days</b>
Boston	52,420	21%		30,460	61%	\$103,493	48 Days
Chicago	35,780	25%		31,178	47%	\$100,869	40 Days
Las Vegas	2,220	23%		1,576	37%	\$90,684	36 Days
San Francisco	45,950	27%		37,177	58%	\$116,865	51 Days

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>US</b>	<b>111,127</b>	<b>16%</b>	<b>\$83,945</b>	<b>40 Days</b>
Boston	4,822	16%	\$90,659	43 Days
Chicago	5,752	18%	\$84,405	43 Days
Las Vegas	343	22%	\$83,765	37 Days
San Francisco	5,578	15%	\$103,215	52 Days

## Top Skills

Software Developers need both the technical skills of computer architecture and programming languages and the soft skills of communication, problem solving, and project management. The top general purpose programming languages demanded by employers are JAVA, Microsoft C# and C++.

The following list of skills identifies required competencies, specified by employers, for Software Developers.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
JAVA	Systems Engineering	Communication Skills
SQL	Debugging	Writing
JavaScript	Simple Object Access Protocol (SOAP)	Problem Solving
Microsoft C#	Relational Databases	Troubleshooting
LINUX/UNIX	Systems Development Lifecycle	Organizational Skills
C++	Technical Writing/Editing	Microsoft Windows
.NET Programming	Business Process	Planning
Extensible Markup Language (XML)	Product Development	Project Management
Object-Oriented Analysis and Design (OOAD)	Optimization	Quality Assurance and Control
jQuery	Computer Engineering	Research

## Top Certifications

The requirement for certification in this occupational group (8%) is relatively low compared to other IT roles. The following list shows the top certifications employers are demanding for Software Developer roles.

Top Certifications
Microsoft Certified Systems Engineer (MCSE)
Capability Model Maturity Integration (CMMI) Certification
Cisco Certified Network Associate
Project Management Certification (e.g. PMP)
Certified Information Systems Security Professional (CISSP)
Cisco Certified Network Professional (CCNP)
VMware Certified Professional
Microsoft Certified It Professional (MCITP)
Security+
Cisco Certified Internetwork Expert (CCIE)

## Top Titles

The following list shows the top job titles employers use to describe Software Developer roles. These represent the job titles that students and job seekers should focus on when searching Software Developer positions.

Top Titles
Software Engineer
Java Developer
.Net Developer
Senior Software Engineer
Systems Engineer
Software Developer
Senior Java Developer
Developer
Senior Systems Engineer
Senior Net Developer

## Sample Job Posting

This is a sample job posting for a software developer.

Overview
<p><b>Our company</b></p> <p>At [REDACTED], we're changing the world. How? We give people the tools to bring their ideas to life and create content that makes life more fun and work more meaningful. We give businesses and organizations the power to truly engage their customers. We're the ones behind the gorgeously designed content that streams across your laptop, TV, phone, and tablet every day—and we're the ones who harness the massive power of big data to help companies move from data to insight and insight to action by delivering content that people crave most. We're a company that understands that product innovation comes from people innovation, and that's why we invest in cultivating leaders throughout the organization. If you're passionate about leading from where you sit, join us.</p> <p><b>What you'll do</b></p> <p>Design and implement enterprise tools for social media marketing. Implement scalable, maintainable and test software code using Ruby, JavaScript, and other languages. Write repeatable unit and functional test to verify product code. Mentor other engineers when applicable. Maintain existing software by fixing bugs, document, and discuss software design in collaborative environment.</p>
Position Specific Details
<p><b>The challenge</b></p> <p>Design and implement enterprise tools for social media marketing. Implement scalable, maintainable and test software code using Ruby, JavaScript, and other languages.</p> <p><b>What you need to succeed</b></p> <p>Bachelor's Degree or foreign degree equivalent in Computer Science, Computer Engineering, or related field and six (6) months of experience in software development. Education or experience background must include experience with Ruby, JavaScript, Object Oriented Design/Programming, MySQL, Algorithms and software testing. Any suitable combination of education, training, or experience is acceptable.</p> <p><b>JOB LOCATION FOR POSITION LISTED ABOVE:</b> San Francisco, CA</p>

## Matching Military Occupations

This list identifies military occupations in the various services for both enlisted and officer career paths that are a possible match Software Developers.

<b>MOC</b>	<b>MOC Title</b>	<b>Service</b>	<b>Career</b>
5309	Computer Science	Navy	Officer
5707	Combat Systems – Software Design	Navy	Officer
9740	Digital Computer System Programmer	Navy	Officer



## User Support Specialist

User Support Specialists provide technical, often referred to as “help desk”, support to computer users. This occupational group requires a wide variety of experience and technical sophistication, and the core duties focus on offering support around computer hardware, software and operation system installation, troubleshooting and repair, office machine maintenance, and network system setup and configuration.

On average, User Support Specialist postings remain open for 29 days (considerably less than the average for other IT career areas). Certain urban areas (Boston and San Francisco) report more difficulty in filling these postings (33 days and 35 days, respectively). The average advertised salary, nationally, is \$47,590; Boston and San Francisco are measurably higher (\$59,217 and \$61,953 respectively).

### Posting Counts and Salary

	<b>Jobs <sup>2</sup></b>	<b>Projected Growth <sup>2</sup></b> (2012 - 2022)		<b>Job Postings <sup>3</sup></b> (2014)	<b>Growth <sup>3</sup></b> (2010 - 2014)	<b>Average Salary <sup>3</sup></b>	<b>Open <sup>3</sup></b>
<b>Nationally</b>	<b>563,540</b>	<b>20%</b>		<b>118,500</b>	<b>41%</b>	<b>\$47,590</b>	<b>29 Days</b>
Boston	14,570	19%		3,842	62%	\$59,217	33 Days
Chicago	18,840	19%		4,817	77%	\$53,641	30 Days
Las Vegas	1,410	27%		628	54%	\$46,153	23 Days
San Francisco	11,000	25%		2,803	47%	\$61,953	35 Days

The occupational group User Support Specialists represents one of the strongest opportunities for middle skill workers to begin a career in IT. More than half of all postings are open to jobseekers with less than two years of experience (more than any other IT category).

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	<b>61,476</b>	<b>52%</b>	<b>\$43,547</b>	<b>25 Days</b>
Boston	1,728	45%	\$54,771	31 Days
Chicago	2,454	51%	\$42,830	26 Days
Las Vegas	359	57%	\$48,005	23 Days
San Francisco	1,232	44%	\$55,707	34 Days

## Top Skills

These positions provide a solid foundation in critical IT skills that are requested across the IT landscape – such as SQL, JAVA, System and Network Configuration. Workers can build upon this foundation by gaining experience and additional academic credentials before transitioning into other IT occupational groups.

The following list of skills identifies required competencies, specified by employers, for User Support Specialists.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
Microsoft Windows	Technical / IT Support	Troubleshooting
Microsoft Office	Help Desk Support	Communication Skills
SQL / SQL Server	Repair	Customer Service
Oracle	Software Installation	Writing
UNIX / LINUX	Printers	Problem Solving
Transmission Control Protocol / Internet Protocol (TCP / IP)	System and Network Configuration	Organizational Skills
JAVA	Computer Installation and Setup	Research
Virtual Private Networking (VPN)	Troubleshooting Technical Issues	Detail - Oriented
CISCO	Personal Computers	Planning
Domain Name System (DNS)	Telecommunications	Project Management

## Top Certifications

The requirement for certification in this occupational group (18%) is relatively high compared to other IT occupational groups. The following list shows the top certifications employers require for User Support Specialists.

Top Certifications
Certified A+ Technician
Network + Certified
Microsoft Certified Professional (MCP)
Microsoft Certified Systems Engineer (MCSE)
CISCO Certified Network Associate
Microsoft Certified Systems Administrator (MCSA)
Security +
Microsoft Certified IT Professional (MCITP)
IT Infrastructure Library
Microsoft Certified Technology Specialist (MCTS)

## Top Titles

The following list shows the top job titles employers use to describe User Support Specialist roles. These represent the job titles that students and job seekers should focus on when searching User Support Specialist positions.

Top Titles
Desktop Support
Help Desk / Help Desk Technician
Help Desk Analyst
Desktop Support Technician
Technical Support Specialist
PC Technician
Technical Support Engineer
Technical Support Analyst
Computer Technician
Desktop Support Analyst

## Sample Job Posting

### Overview

#### Company Description

We are a complete small and mid-size business computer & networking solution provider. We provide proactive systems management, secure offsite backup, disaster recovery planning assistance, network security implementation, network systems integration, remote & on-site support, hardware & software installation, web hosting/design, and technology-centric business planning and consultation.

#### Job Description

We are an established, financially strong, fast growing Managed IT Services firm based in Northern NJ. We work primarily with client's organizations in healthcare, professional services, insurance, and manufacturing. Our mission and purpose is to make businesses more productive with relevant technology.

Our Managed IT Services include systems monitoring, preventative maintenance, IT help-desk support, and technology-related project management services. We set up, maintain and manage networks for businesses with between 10 and 150 PCs, and with 1 to 10 Servers in single and multi-site locations. We provide on-site and remote help desk support as well as 24x7 systems monitoring and alerting.

### Position Specific Details

#### Responsibilities

- Provide telephone/remote and on-site troubleshooting, training, and tech support to end users
- Perform software installs and updates
- Maintain accurate client network documentation
- Set up and configure PCs, printers, peripherals and networking equipment
- Assist with network deployment projects

#### Qualifications

- Minimum of one year of experience providing desktop technical support to end users in a business environment
- MCP or MCTS certification strongly favored
- PC and Windows troubleshooting skills
- Excellent listening and communication skills
- Excellent web research skills

## Matching Military Occupations

This list identifies military occupations in the various services for both enlisted and officer career paths that are a possible match for User Support Specialists.

MOC	MOC Title	Service	Career
1B411	Cyberspace Defense Operations, Helper	Air Force	Enlisted
1B431	Cyberspace Defense Operations, Apprentice	Air Force	Enlisted
25B	Information Technology Specialist	Army	Enlisted
25N	Nodal Network Systems Operator-Maintainer	Army	Enlisted
25U	Signal Support Systems Specialist	Army	Enlisted
31U	Signal Support Systems Specialist	Army	Enlisted
94F	Computer/Detection Systems Repairer	Army	Enlisted
275	Information Systems Technician	Coast Guard	Enlisted
0651	Data Systems Technician	Marine Corps	Enlisted
0652	Certification Authority Workstation (CAW) Operator	Marine Corps	Enlisted
0653	Defense Message System (DMS) Specialist	Marine Corps	Enlisted
0681	Information Security Technician	Marine Corps	Enlisted
0689	Computer Network Defense Specialist	Marine Corps	Enlisted
2542	Defense Message System (DMS) Specialist	Marine Corps	Enlisted
2735	Journeyman Networking Core	Marine Corps	Enlisted
2778	Mission Distribution System Operator	Marine Corps	Enlisted
2783	Submarine Local Area Network (SUBLAN) Technician	Marine Corps	Enlisted
2821	Computer Technician	Marine Corps	Enlisted
2790	Information Systems Technician (IAT I)	Navy	Enlisted
9305	Basic Digital Network Analysis	Navy	Enlisted
9306	Network Operations (NWO)	Navy	Enlisted
9307	Network Analysis and Reporting (NAR)	Navy	Enlisted
9308	Navy Interactive ON-NET Operator	Navy	Enlisted
9309	Navy Interactive ON-NET Operator Trainer	Navy	Enlisted
CTM	Cryptologic Technician Maintenance	Navy	Enlisted
CTN	Cryptologic Technician Networks	Navy	Enlisted
IT	Information Systems Technician	Navy	Enlisted
ITS	Information Systems Technician Submarines	Navy	Enlisted
131A	Field Artillery Targeting Technician	Army	Officer
140E	Air and Missile Defense (AMD) Systems Tactician/Technician	Army	Officer
251A	Information Systems Technician	Army	Officer
2805	Data/Communications Maintenance Officer	Marine Corps	Officer
5910	Aviation Radar Maintenance Officer	Marine Corps	Officer
5950	Air Traffic Control Systems Maintenance Officer	Marine Corps	Officer
9745	ADP Systems Maintenance Officer	Navy	Officer
9750	ADP Customer Liaison Officer	Navy	Officer

## Web Developer

Websites have become the primary way that consumers access information and services, and Web Developers, whose role is to build and maintain these websites, have become increasingly critical. There are approximately 110,000 job postings nationally for Web Developers, with a high number of postings in tech hubs such as Boston, Chicago, San Francisco). Web developers are highly paid (the average advertised salary in 2014 was \$87,971, and as high as \$110,000 in San Francisco).

There appears to be a mismatch between the supply of web developers and the strong and growing demand that employers have for them. Nationally, job postings for web developers remain online for an average of 38 days (5 days longer than the national average for all jobs), and in certain urban areas (Boston, Las Vegas and San Francisco) more than 40 days. This apparent shortage also exists for middle skill workers (postings remaining online for 43 days in Boston and 38 days in San Francisco).

### Posting Counts and Salary

	Jobs <sup>2</sup>	Projected Growth <sup>2</sup> (2012 – 2022)		Job Postings <sup>3</sup> (2014)	Growth <sup>3</sup> (2010 – 2014)	Average Salary <sup>3</sup>	Open <sup>3</sup>
<b>Nationally</b>	<b>121,020</b>	<b>20%</b>		<b>109,212</b>	<b>22%</b>	<b>\$87,971</b>	<b>38 Days</b>
Boston	3,650	23%		5,063	53%	\$97,841	43 Days
Chicago	3,620	20%		4,721	19%	\$88,879	31 Days
Las Vegas	440	23%		357	4%	\$82,580	40 Days
San Francisco	4,590	32%		7,142	34%	\$111,099	46 Days

Web Developers are in strong demand, with 22% of Web Developer roles open to middle skill candidates. Nationally, these positions offer an average advertised salary of \$76,937, (over \$100,000 in San Francisco).

## Middle Skill Postings

	Middle Skill Postings	% of Total	Average Salary	Open
<b>Nationally</b>	<b>23,780</b>	<b>22%</b>	<b>\$76,937</b>	<b>34 Days</b>
Boston	1,140	23%	\$89,037	43 Days
Chicago	1,089	23%	\$79,054	29 Days
Las Vegas	94	26%	\$65,062	N/A
San Francisco	1,349	19%	\$108,219	38 Days

## Top Skills

There are no formal educational or licensure requirements in web development. Employers require advanced knowledge and skills in client-side languages, such as HTML5 and JavaScript, and server-side frameworks, such as PHP, Python and Ruby. Web Developers are also required to be creative (ensuring that applications are appealing to consumers) with strong communication skills (capable of working collaboratively with user experience designers and web designers).

The following list of skills identifies required competencies, specified by employers, for Web Developers.

Top Software Skills	Top Specialized Skills	Top Baseline Skills
JavaScript	Web Site Development	Communication Skills
jQuery	Web Development	Writing
HTML5	Web Application Development	Problem Solving
Hypertext Preprocessor (PHP)	Web Site Design	Organizational Skills
JAVA	User Interface (UI) Design	Creativity
AJAX	JSON	Detail-Oriented
SQL	E-Commerce	Research
Extensible Markup Language (XML)	Software Engineering	Troubleshooting
Adobe Photoshop	Graphic Design	Quality Assurance and Control
.NET Programming	Debugging	Project Management

## Top Certifications

Certifications do not play a significant role in the Web Developer occupation (2% of postings). The following list shows the top certifications employers are demanding for Web Developers.

Top Certifications
Capability Model Maturity Integration (CMMI) Certification
Microsoft Certified Solution Developer (MCSD)
Security+
Project Management Certification (e.g. PMP)
Java Certification (e.g. Sun Certified Java Associate)
Microsoft Certified Professional (MCP)
Microsoft Certified Technology Specialist (MCTS)
Scrum
Microsoft Certified Systems Engineer (MCSE)

## Top Titles

The following list shows the top job titles employers use to describe Web Developer roles. These represent the job titles that students and job seekers should focus on when searching Web Developer positions.

Top Titles
Web Developer
Front End Developer
PHP Developer
Web Designer
UI Developer
Android Developer
Front End Web Developer
Senior Web Developer
UX Designer
Web Application Developer



## Sample Job Posting

### Overview

You will work alongside our Lead Web Designer in an effort to develop custom UI design concepts and deploy them into various platforms - including: WordPress and our proprietary CMS platforms. We are open to your ideas and will challenge you to grow your skills in client side (HTML, CSS & JS) development. Ability to precisely convert PhotoShop UI layout designs and web content into high quality, cross-browser W3C valid XHTML and a strong command of CSS markup is a must. Candidate will also assist with creating supporting graphics, content development and ongoing website maintenance.

### Position Specific Details

#### Requirements

- We are seeking candidates with 1 to 2+ years of work experience in the following areas.
- A bachelor's degree in web design or a related field is preferred but, not required.
- Strong command of Dreamweaver and PhotoShop
- Illustrator & Flash a plus
- Experience with Content Management Systems (ex. WordPress)
- Knowledge and application of XHTML web standards, CSS, HTML (5)
- Responsive & Mobile site design a plus
- Experience in JavaScript and jQuery a plus
- Desire to learn and utilize new and emerging web technologies
- Web, Email & Print design a plus

#### Qualifications

- Must be able to manage multiple projects simultaneously
- High degree of professionalism and strong written and oral communication skills
- Must display strong attention to detail
- Able to work in a team environment in joint effort
- Self-motivated, organized and accountable
- Appreciation of the balance between creative, technical and marketing
- Must be able to work on-site, during normal business hours, as scheduled

## Matching Military Occupations

There are no direct matching military occupations for web developers.

## REGIONAL ANALYSIS

The following tables provide a regional view of the aforementioned occupational groups.

### Boston (Overall IT Employment)

	Jobs <sup>4</sup>	Projected Growth <sup>4</sup> (2012 - 2022)		Postings <sup>5</sup> (2014)	Growth (2010 - 2014)	Average Salary <sup>5</sup>	Open <sup>5</sup>
<b>The 9 Studied Occupations</b>	<b>107,540</b>	<b>20%</b>		<b>97,645</b>	<b>58%</b>	<b>\$82,621</b>	<b>40 Days</b>
Computer Programmer	8,580	7%		2,839	25%	\$99,250	41 Days
Computer System Analyst	14,760	24%		6,033	32%	\$95,746	40 Days
Data Engineer	7,480	15%		10,902	47%	\$87,765	40 Days
Health IT Specialist	N/A	18%		1,681	41%	\$61,941	31 Days
InfoSec Analyst	2,430	39%		1,794	154%	\$107,626	43 Days
Net Support Specialist	3,650	23%		452	23%	\$68,902	50 Days
Software Developer	52,420	21%		30,460	61%	\$103,493	48 Days
User Support Specialist	14,570	19%		3,842	62%	\$59,217	33 Days
Web Developer	3,650	23%		5,063	53%	\$97,841	43 Days

<sup>4</sup> Source: Employment related data (Employment, Employment Growth) is from the Bureau of Labor Statistics

<sup>5</sup> Source: Posting related data (Postings, Growth, Average Salary, Duration) is from Burning Glass Technologies

## Boston (Middle Skill Postings)

	Middle Skill Postings	% of Total	Average Salary	Open
<b>The 9 Studied Occupations</b>	<b>12,633</b>	<b>23%</b>	<b>\$78,765</b>	<b>39 Days</b>
Computer Programmer	503	18%	\$86,117	37 Days
Computer System Analyst	992	16%	\$83,509	42 Days
Data Engineer	2,436	22%	\$72,501	37 Days
Health IT Specialist	642	38%	\$40,094	27 Days
InfoSec Analyst	294	16%	\$101,389	30 Days
Network Support Specialist	76	17%	\$44,997	N/A
Software Developer	4,822	16%	\$90,659	43 Days
User Support Specialist	1,728	45%	\$54,771	31 Days
Web Developer	1,140	23%	\$89,037	43 Days

## Chicago (Overall IT Employment)

	<b>Jobs <sup>4</sup></b>	<b>Projected Growth <sup>4</sup></b> (2012 – 2022)	<b>Postings <sup>5</sup></b> (2014)	<b>Growth <sup>5</sup></b> (2010 – 2014)	<b>Average Salary <sup>5</sup></b>	<b>Open <sup>5</sup></b>
<b>The 9 Studied Occupations</b>	<b>121,360</b>	<b>19%</b>	<b>77,669</b>	<b>54%</b>	<b>\$89,357</b>	<b>37 Days</b>
Computer Programmer	16,550	13%	3,841	20%	\$97,441	32 Days
Computer System Analyst	17,470	26%	10,727	43%	\$89,539	35 Days
Data Engineer	18,030	12%	16,082	56%	\$84,506	37 Days
Health IT Specialist	5,220	12%	3,186	88%	\$47,335	35 Days
InfoSec Analyst	2,230	30%	2,442	214%	\$95,311	38 Days
Net Support Specialist	3,620	20%	675	81%	\$59,328	40 Days
Software Developer	35,780	25%	31,178	47%	\$100,869	40 Days
User Support Specialist	18,840	19%	4,817	77%	\$53,641	30 Days
Web Developer	3,620	20%	4,721	19%	\$88,879	31 Days

## Chicago (Middle Skill Postings)

	Middle Skill Postings	% of Total	Average Salary	Open
<b>The 9 Studied Occupations</b>	<b>17,778</b>	<b>26%</b>	<b>\$71,911</b>	<b>36 Days</b>
Computer Programmer	738	19%	\$87,197	34 Days
Computer System Analyst	2,208	21%	\$78,337	35 Days
Data Engineer	3,757	23%	\$72,540	38 Days
Health IT Specialist	1,311	41%	\$42,174	33 Days
Information Security Analyst	353	14%	\$89,667	33 Days
Network Support Specialist	116	17%	\$42,669	N/A
Software Developer	5,752	18%	\$84,405	43 Days
User Support Specialist	2,454	51%	\$42,830	26 Days
Web Developer	1,089	23%	\$79,054	29 Days

## Las Vegas (Overall IT Employment)

	Jobs <sup>4</sup>	Projected Growth <sup>4</sup> (2012 - 2022)		Postings <sup>5</sup> (2014)	Growth <sup>5</sup> (2010 - 2014)	Average Salary <sup>5</sup>	Open <sup>5</sup>
<b>The 9 Studied Occupations</b>	<b>10,800</b>	<b>19%</b>		<b>5,179</b>	<b>41%</b>	<b>\$72,613</b>	<b>33 Days</b>
Computer Programmer	1,170	7%		245	-9%	\$80,929	35 Days
Computer System Analyst	1,500	25%		555	71%	\$77,366	30 Days
Data Engineer	2,130	9%		965	37%	\$68,394	35 Days
Health IT Specialist	1,250	19%		523	23%	\$41,976	26 Days
InfoSec Analyst	240	N/A		259	107%	\$74,887	34 Days
Net Support Specialist	440	23%		71	97%	\$64,256	N/A
Software Developer	2,220	23%		1,576	37%	\$90,684	36 Days
User Support Specialist	1,410	27%		628	54%	\$46,153	23 Days
Web Developer	440	23%		357	4%	\$82,580	40 Days

## Las Vegas (Middle Skill Postings)

	Middle Skill Postings	% of Total	Average Salary	Open
<b>The 9 Studied Occupations</b>	<b>1,586</b>	<b>35%</b>	<b>\$68,303</b>	<b>30 Days</b>
Computer Programmer	70	29%	\$74,902	N/A
Computer System Analyst	157	28%	\$85,339	37 Days
Data Engineer	293	30%	\$65,409	29 Days
Health IT Specialist	223	43%	N/A	24 Days
Information Security Analyst	42	16%	N/A	N/A
Network Support Specialist	5	7%	N/A	N/A
Software Developer	343	22%	\$83,765	37 Days
User Support Specialist	359	57%	\$48,005	23 Days
Web Developer	94	26%	\$65,062	N/A

## San Francisco (Overall IT Employment)

	Jobs <sup>4</sup>	Projected Growth <sup>4</sup> (2012 - 2022)		Postings <sup>5</sup> (2014)	Growth <sup>5</sup> (2010 - 2014)	Average Salary <sup>5</sup>	Open <sup>5</sup>
<b>The 9 Studied Occupations</b>	<b>102,290</b>	<b>26%</b>		<b>72,690</b>	<b>50%</b>	<b>\$106,353</b>	<b>46 Days</b>
Computer Programmer	8,580	12%		3,195	24%	\$108,795	42 Days
Computer System Analyst	16,280	27%		6,217	33%	\$98,761	42 Days
Data Engineer	7,250	19%		12,807	41%	\$91,469	41 Days
Health IT Specialist	2,120	21%		1,323	40%	\$54,834	35 Days
InfoSec Analyst	1,930	40%		1,673	118%	\$109,123	46 Days
Net Support Specialist	4,590	32%		353	34%	\$87,457	33 Days
Software Developer	45,950	27%		37,177	58%	\$116,865	51 Days
User Support Specialist	11,000	25%		2,803	47%	\$61,953	35 Days
Web Developer	4,590	32%		7,142	34%	\$111,099	46 Days



## San Francisco (Middle Skill Postings)

	Middle Skill Postings	% of Total	Average Salary	Open
<b>The 9 Studied Occupations</b>	<b>13,239</b>	<b>20%</b>	<b>\$89,983</b>	<b>46 Days</b>
Computer Programmer	504	16%	\$106,381	39 Days
Computer System Analyst	1,086	17%	\$80,343	42 Days
Data Engineer	2,753	21%	\$80,823	50 Days
Health IT Specialist	527	40%	\$38,071	27 Days
Information Security Analyst	162	10%	\$81,300	40 Days
Network Support Specialist	48	14%	N/A	N/A
Software Developer	5,578	15%	\$103,215	52 Days
User Support Specialist	1,232	44%	\$55,707	34 Days
Web Developer	1,349	19%	\$108,219	38 Days

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### About BATEC

[www.batec.org](http://www.batec.org)

BATEC (Broadening Advanced Technological Education Connections), a National Science Foundation-funded Center of Excellence for Computing and Information Technologies, is dedicated to the complex mission of developing career-focused pathways and practical work experience for motivated, typically underserved high school, community college and university students in urban environments which feature a high demand for skilled labor.

### About Burning Glass

[www.burning-glass.com](http://www.burning-glass.com)

Burning Glass Technologies delivers job market analytics that empower employers, workers, and educators to make data-driven decisions. Burning Glass is reshaping how the job market works, with data that identify the skill gaps that keep job seekers and employers apart and tools that enable both sides to bridge that gap and connect more easily. Based in Boston, Burning Glass is playing a growing role in informing the global conversation on education and the workforce, and in creating a job market that works for everyone.

### About NSF

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The National Science Foundation's (NSF) Advanced Technological Education (ATE) program seeks to improve the education of technicians who work in advanced industries that are important to the nation's economy and security. The program involves partnerships between academic institutions and industry to promote improvement in the education of science and engineering technicians at the undergraduate and secondary school levels. The ATE program supports curriculum development; professional development of college

faculty and secondary school teachers; career pathways to two-year colleges from secondary schools and from two-year colleges to four-year institutions; and other activities.

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