

Occupational Profile: Computer Software Engineers, Systems Software

GENERAL OCCUPATION DESCRIPTION

Research, design, develop, and test operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computing applications. Set operational specifications and formulate and analyze software requirements. Apply principles and techniques of computer science, engineering, and mathematical analysis.

Source: O*NET online. <http://online.onetcenter.org>

REQUIRED EDUCATION

As shown in the table to right, over 30% of interviewed employers reportedly require a two-year degree or the equivalent, with an additional 57% requiring a four-year college degree or more.

Required Education	
Percent of Employers Requiring HS Diploma or Less	11.66%
Percent of Employers Requiring 2-Year Degree or Equiv	30.91%
Percent of Employers Requiring BS Diploma or More	57.42%

Source: Bureau of Labor Statistics

WAGES

Computer Software Engineer, Systems Software is considered a high-wage occupation, with excellent possibility for wage advancement with experience. Employers in the State of Arizona generally pay less as compared with the overall United States, especially for experienced employees.

Location	Pay Period	2005				
		10%	25%	Median	75%	90%
United States	Hourly	\$24.95	\$31.28	\$39.48	\$48.94	\$57.89
	Yearly	\$51,900	\$65,100	\$82,100	\$101,800	\$120,400
Greater Phoenix	Hourly	\$24.27	\$29.08	\$35.43	\$42.01	\$48.83
	Yearly	\$50,506	\$60,515	\$73,730	\$87,423	\$101,615
Arizona	Hourly	\$23.51	\$30.05	\$36.40	\$43.94	\$53.24
	Yearly	\$48,900	\$62,500	\$75,700	\$91,400	\$110,700

Source: Bureau of Labor Statistics

As shown in the table to right, a national comparison of wages for this occupation reveals Arizona ranks 23rd in terms of median wages.

RANK	Location	Median Wage 2005	
		Hourly	Annual
1	New Jersey	\$44.29	\$92,100
2	Maryland	\$43.64	\$90,800
3	Oregon	\$43.55	\$90,600
4	California	\$43.36	\$90,200
5	Massachusetts	\$41.90	\$87,200
23	ARIZONA	\$36.40	\$75,700

Source: Bureau of Labor Statistics

The table below provides a comparison of wages by sub-industry for the Greater Phoenix region (2005). As shown, the main employment sectors, “Professional, Scientific, and Technical Services” and “Credit Intermediation and Related Activities” pay higher than or comparably as compared to other main employment sectors.

Wages by Industry: Greater Phoenix MSA (2005)	Rounded Employment	Mean Wage	10th Percentile Wage	25th Percentile Wage	Median Wage	75th Percentile Wage	90th Percentile Wage
Professional, Scientific, and Technical Services	470	\$37.52	\$22.16	\$29.47	\$37.66	\$45.79	\$53.24
Credit Intermediation and Related Activities	410	\$37.21	\$27.85	\$31.39	\$37.15	\$42.96	\$50.54
Internet Service Providers, Web Search Portals, and Data Pro	260	\$34.04	\$25.61	\$29.98	\$34.10	\$39.57	\$43.58
Public Administration	170	\$35.80	\$26.34	\$30.32	\$34.50	\$41.14	\$47.16
Hospitals	100	\$35.59	\$19.22	\$23.57	\$34.81	\$44.87	\$55.92
Administrative and Support Services	.	\$37.59	\$22.81	\$28.79	\$37.66	\$45.08	\$54.68
Publishing Industries (except Internet)	.	\$36.69	\$22.85	\$30.54	\$36.81	\$43.72	\$51.29
Nonstore Retailers	.	\$30.79	\$27.31	\$28.61	\$30.76	\$32.91	\$34.20

EMPLOYMENT

As shown in the table below, this occupation has a projected 27% growth rate over 10 years (between 2003 and 2013) for the Greater Phoenix region. There are an average projected 107 job openings each year, comprised of 78 new jobs and 29 positions vacated by individuals leaving the field (due to retirement, death, career changes, or other reasons).

	10-YEAR CHANGE			AVERAGE ANNUAL		
	Employment		Percent Change	Job Openings	Growth	Separations
United States	2004	2014				
Computer software engineers, systems software	340,300	486,500	43%	17,980	n/a	n/a
Arizona	Employment		Percent Change	Job Openings	Growth	Separations
	2004	2014				
Computer software engineers, systems software	5,260	7,240	38%	250	n/a	n/a
Greater Phoenix	Employment		Percent Change	Job Openings	Growth	Separations
	2003	2013				
Computer software engineers, systems software	2,910	3,690	27%	107	78	29

Source: Bureau of Labor Statistics

*Job Openings refers to the average annual job openings due to growth and net replacement.

Source: Bureau of Labor Statistics

**N/A is displayed in cases where data is not available or cannot be published because of federal data privacy standards.

An additional source of information regarding this occupation can be provided by analysis of employer survey data collected for the Maricopa County Community Colleges by the ERISS Corporation in 2004. As shown, the ERISS survey data shows a projected 1-year growth rate of 32%, which is much higher than the average of 2.7% per year reflected by the BLS data above.

Additionally, the ERISS data provides an indicator of yearly turnover for this occupation, which is reported to be moderate at 6%.

ERISS Occupational Survey Data (2004)			
Greater Phoenix	Growth	Turnover	Demand
Computer Software Engineers, Systems Software	32%	6%	37%

Comparison of employment projections for top five regions for Computer Software Engineer, Systems Software

As shown in the table to right, a national comparison reveals the State of Arizona ranks 17th in terms of projected 10-year growth for this occupation (38%).

RANK	Location	Employment		Percent Change
		2004	2014	
1	Nevada	750	1,360	81%
2	Utah	4,100	6,960	70%
3	Alabama	2,460	4,080	66%
4	Idaho	1,070	1,760	64%
5	Colorado	10,850	17,670	63%
17	ARIZONA	5,260	7,240	38%

Source: Bureau of Labor Statistics

Employment by Industry

The table below shows the industries that most commonly employ Computer Software Engineer, Systems Software, and the proportion of employment accounted for at the national level. As shown, "Computer systems design and related services" is the largest employer for this occupation (25.5%).

Percent of Employment Nationally by Industry	
Percent	Industry
25.5%	Computer systems design and related services
6.3%	Software publishers
5.4%	Computer and peripheral equipment manufacturing
5.4%	Wired telecommunications carriers
5.2%	Research and development in the physical, engineering, and life sciences
3.9%	Data processing, hosting, and related services
3.7%	Navigational, measuring, electromedical, and control instruments manufacturing
3.3%	Management of companies and enterprises

Source: Bureau of Labor Statistics

Geo-Location Overlay of Employers with 10 or More Employees that Potentially Employ Occupation (n = 198)

