

S A N S 2 0 0 8

SALARY & CERTIFICATION S U R V E Y

Results
for
Calendar
Year
2008



Executive Summary

The SANS 2008 Salary and Certification Survey was conducted by Rob Kolstad of Delos Enterprises on behalf of the SANS Institute to examine salaries, the importance of certifications, and education trends among information security professionals as well as to present an outlook for 2009. The survey was conducted online in November, 2008 with a total of 2,120 respondents from a variety of industries.

New additions to the SANS Salary Survey include a detailed analysis of the most important certifications in the information security industry as well as a comprehensive examination of both formal and informal training.

This year's survey is divided into five sections: Demographics, Salary, Certifications, Continuing Education and a Twelve-month Outlook.

Essential findings from the survey:

- Salaries for information security professionals are high. Only 1.65% of respondents earn less than US \$40,000 per year and over 38% earn US \$100,000 or more per year.
- 81% of respondents with hiring responsibilities consider certification a factor in their hiring decisions.
- 41% of the respondents said their organizations use certifications as a factor when determining salary increases.
- In an overall certification assessment, 11 GIAC certifications were ranked in the top 15 very important certifications in the industry.
- The most experienced security professionals (those with 20+ years in the industry) ranked 15 GIAC certifications among the top 15 very important certifications.
- The overall mean funding for training was US \$2,854 per year with a median of US \$2,000 per year.
- Digital forensics, intrusion detection, and penetration testing are the technical topics respondents are most interested in learning in 2009.
- As of late November 2008, just over 79% of respondents forecast no information security personnel reductions in the next 12 months.
- Over 25% of respondents plan to deploy the following technologies in 2009:
 - Configuration Management
 - SIEM (Security Information and Event Management)
 - Storage Security
 - Wireless Security Solutions
- The top five reasons security professionals stay with their current employer:
 - Benefits (66%)
 - Flexible hours (51%)
 - Salary/compensation (50%)
 - Job security (49%)
 - Challenge (43%)
- The top five reasons security professionals would consider changing jobs:
 - Salary/compensation (78%)
 - Challenge (55%)
 - Benefits (53%)
 - Bonuses (52%)
 - Job security (52%)
- The best places to find an information security position are in the metro areas of Las Vegas, Nevada; Dallas, Texas; and Washington, DC.

I. Demographics

The demographics section examines respondents' gender, industry, title, metro area, education, employer's annual revenue, number of employees, years of experience, and years with current employer.

We began by asking the gender of those who participated in the survey. It came as no surprise to learn that information security remains a male-dominated industry. Only 1/6 of the respondents were female.

Gender		
Gender	# Resp	% Resp
Men	1752	82.6%
Women	368	17.4%

45 industries were represented in this survey, but the majority of respondents came from the categories of Finance, Education, Government, Healthcare, and Manufacturing.

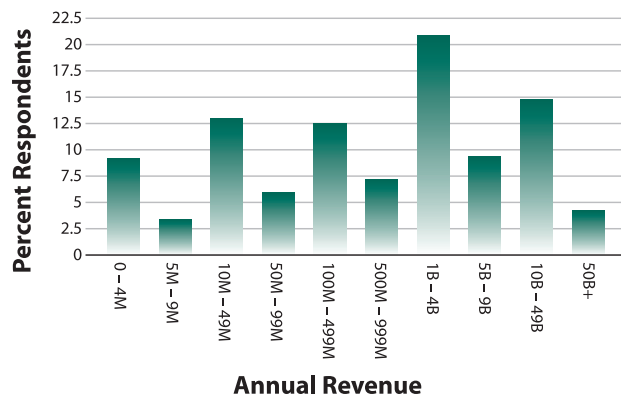
Industry	
Title	% Resp
Banking • Finance • Insurance	14.4%
Education	12.5%
Government (Non-Military)	7.8%
Government - Contracting	7.0%
Healthcare • Medicine	6.7%
Government (Military)	4.6%
Manufacturing	4.2%

The information technology field has a multitude of job titles, however this survey concentrated on the 54 (general) titles. The most popular were Security Engineer/Architect (12%) followed by Information Security Analyst (12%), IT Director (9%), Systems Administrator (7%), Information Security Officer, Security Director (6%), and Network Administrator (6%).

Job Titles	
Title	% Resp
Security Engineering • Architect	12.2%
Information Security Analyst • Specialist	11.6%
IT Director • Manager	8.6%
Systems Administrator	7.2%
Information Security Officer	5.6%
Network Administrator	5.5%
Systems Engineer	4.4%
Analyst	4.1%
Security Administrator	3.4%
Auditor	2.8%
Chief Information Security Officer	2.2%
Security Auditor	2.1%
Director of Security	1.7%
Network Manager	1.7%
Project Leader	1.7%
Applications Programmer	1.4%
Engineer	1.2%
Forensic • Pen Test • Intrusion Detection Analyst	1.2%
Network Architect	1.1%

Annual Revenue

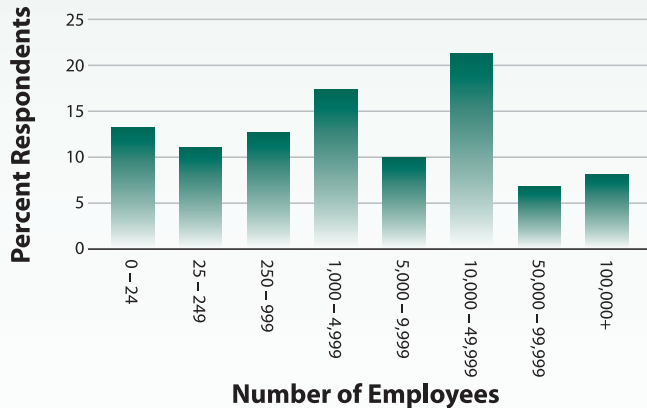
Both small and large companies were represented in the survey, with the largest number of respondents categorizing their company as earning \$1- \$4 billion in annual revenue:



I. Demographics (Continued)

Number of Employees

The number of employees at respondents' organizations also ranged from small to large, with the highest concentration having 10,000-40,000 total employees:



College education is the rule of the day for this survey's respondents. Over three-quarters have at least a Bachelor's Degree; over a quarter have a Master's Degree or Ph.D.

Respondent's Level of Education

Education Level	% Resp
High School Diploma	2.5%
Associate's Degree	6.6%
Some College • Technical School	15.8%
Bachelor's Degree	33.4%
Some Post Bachelors Studies	14.2%
Master's Degree	25.8%
Ph.D.	1.7%

85% of the people who participated in this survey reside in one of 20 metropolitan areas; the highest concentration of respondents was 10% from the Washington, DC metro area.

Metropolitan Areas

Metro Area	% Resp
Washington, DC	10.0%
San Francisco • San Jose • Silicon Valley, CA	4.1%
Chicago, IL	3.8%
Denver, CO	3.7%
New York, NY	3.6%
Boston, MA	3.5%
Dallas, TX	3.3%
Philadelphia, PA	3.0%
Atlanta, GA	2.9%
Los Angeles • Orange County, CA	2.5%
Seattle • Redmond, WA	2.1%
Research Triangle, NC	2.0%
Phoenix, AZ	1.9%
San Diego, CA	1.5%
Austin, TX	1.4%
Houston, TX	1.4%
Minneapolis, MN	1.0%
San Antonio, TX	0.9%
Portland, OR	0.8%
Las Vegas, NV	0.7%

II. Salaries

The statistics include only salaries in the range of US\$10,000-\$250,000 per year since including salaries above \$250,000 in the calculations creates results that do not represent the majority of respondents.



Experience is a key factor in determining salaries. The chart below breaks down overall salary by experience.

This year's survey reveals that information security professionals earn well over the national average salary of \$37,440 for US workers. Only 1.65% of respondents earn less than US\$40,000 annually while over 38% earn US\$100,000 or more per year. The chart on the right shows the distribution of salaries, which includes those at the entry-level to those with 20 years or more of experience.

Salary vs. Years of Experience		
Years' Exp	# Resp	% Resp
0 - 2.99	71,902	8.1%
3 - 4.99	77,558	10.5%
5 - 6.99	87,505	15.5%
7 - 8.99	94,413	15.0%
9 - 10.99	96,291	18.0%
11 - 15.99	104,136	18.6%
16 - 19.99	108,877	4.0%
20+	107,725	10.2%

Which information security titles earn the highest salaries? The chart below breaks down salaries by title and years of experience. Ranking is based on an experience weighted estimated salary for five years of experience. An intriguing observation is of the 23 titles identified, 10 earn a six-figure salary.

Salary vs. Title				
Title	Salary by Years' Experience			
	0 - 4	5 - 9	10+	5-Yr Avg
Senior Security Executive	—	—	160,600	138,534
Chief Information Officer	—	136,857	141,750	129,080
VP (any division)	116,500	122,500#	143,418	124,146
Sales • Account Manager	65,000	95,000#	154,838	119,739
Director of Security	—	112,909	125,165	109,567
Chief Information Security Officer	87,750	109,376	126,296	108,427
Security Director • Manager	98,566	106,928	117,202	105,063
Engineer	100,000	108,333	116,968	104,486
Audit Director	—	98,500	117,701	100,979
Security Engineer • Architect	84,600	96,521	113,843	97,534
Systems Engineer	87,588	97,098	106,075	94,729
Network Architect	74,142	108,166	108,538	93,187
Penetration Tester	—	101,000	101,483	92,924
IT Director • Manager	75,758	95,061	102,071	90,437
Information Security Officer	76,841	90,881	98,661	87,937
Forensic • Pen Test • Intrusion Detection Analyst	56,166	77,033	111,166	87,330
Security Auditor	72,489	91,858	95,987	86,796
Information Security Analyst • Admin • Specialist	71,627	87,427	94,339	84,184
Auditor	73,588	81,676	85,829	81,134
Analyst	69,279	79,288	83,724	77,750
Systems Administrator	60,939	73,664	87,886	74,129
Security Administrator	61,643	75,253	82,787	73,235
Network Administrator	60,648	70,486	72,276	67,372

II. Salaries (Continued)

Which industries have the highest salaries? With 46 industries represented, 19 identified salaries in the six figures. The top five industries with the highest salaries are Food, Engineering, Computer Software, Telecommunications, and IT Security. The industries with the lowest salaries are Law Enforcement, State/Local Government, Distribution/Warehousing, Wholesale, and Education. Ranking is based on an experience weighted estimated salary for five years of experience.

Salary vs. Industry				
Industry	Salary by Years' Experience			
	0 – 4	5 – 9	10+	5-Yr Avg
Food	74,000	132,750	—	109,268
Engineering	64,000	93,400	166,666	108,055
Computer Software	86,125	95,859	130,320	106,114
Telecommunications	99,400	103,470	121,636	105,293
IT Company: Security	65,830	104,705	121,699	100,945
Consulting and Business Services	86,190	100,875	117,340	100,880
Defense	87,575	101,863	113,579	99,755
Biotechnology	72,077	116,500	113,666	99,180
Transportation	67,875	95,112	118,165	95,224
Advertising, P.R., MarComm., or Marketing	40,000	92,500	119,666	94,778
Aeronautical/aerospace	67,062	102,214	116,307	94,346
Hospitality	80,000	94,666	109,333	94,239
Government - Contracting	71,497	95,403	107,841	92,396
Banking • Finance • Insurance	80,307	89,068	108,182	91,651
Accounting	80,714	85,000	110,666	91,526
IT Company: Consulting	72,437	101,465	101,373	90,253
Business Services	—	92,000	102,548	90,229
Healthcare, Medicine	70,265	92,245	104,552	89,561
Utilities	76,397	92,957	99,666	89,441
Manufacturing	72,392	93,553	99,471	89,049
Construction	75,000	93,250	90,524	86,775
Retail	64,937	84,464	107,490	84,748
Government (Non-Military)	80,915	80,966	96,040	83,839
IT Company: ISP/ASP	—	85,464	91,323	81,961
Education	62,919	74,305	78,187	70,980

II. Salaries (Continued)

Formal education is also a key factor in IT security salaries. 75% of respondents hold a Bachelor's Degree or higher and those with 0 - 4 years of experience earn an average salary of \$74,807.

Salary vs. Education			
Title	Salary by Years' Experience		
	0 - 4	5 - 9	10+
High School Diploma	64,850	85,577	88,721
Associates Degree	59,503	83,158	90,389
Some College/Technical School	68,529	87,616	94,240
Bachelors Degree	74,807	91,541	100,865
Some Post Bachelor Studies	75,741	91,100	107,346
Masters Degree	83,075	96,531	113,199
Ph.D.	124,800	82,127	94,290

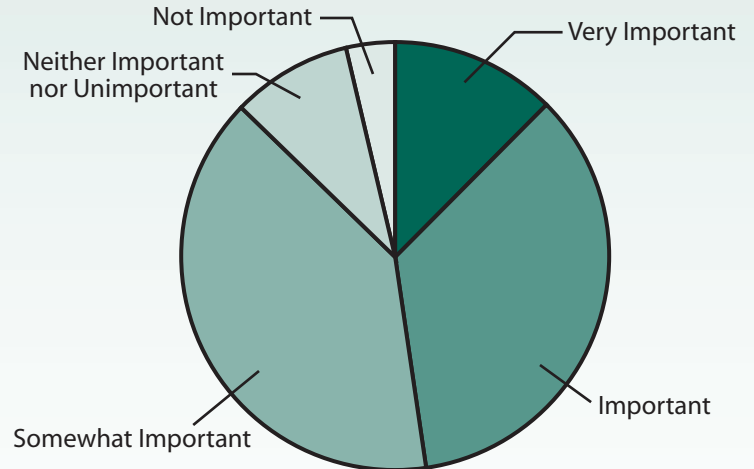
In this survey, 20 metro areas were identified and ranked by salary and years of experience. The chart below shows the top 15 areas based on an experience weighted estimated salary for five years of experience.

Salary vs. Metro Area				
Metro Area	Salary by Years' Experience			
	0 - 4	5 - 9	10+	5-Yr Avg
San Francisco • San Jose • Silicon Valley, CA	88,592	112,730	124,876	108,308
Washington, DC	81,505	105,664	118,982	102,553
New York	72,890	111,194	120,582	102,286
Houston, TX	97,000	104,566	104,833	100,478
Chicago, IL	87,629	98,310	116,857	99,996
Dallas, TX	86,481	93,318	104,140	93,310
Research Triangle, NC	77,937	88,703	112,547	93,237
Philadelphia, PA	78,006	93,316	107,766	92,427
Las Vegas, NV	74,500	89,100	111,000	90,609
Phoenix, AZ	85,333	85,148	104,814	89,979
Denver, CO	85,600	92,787	99,490	89,899
Atlanta, GA	74,535	88,108	102,839	87,968
Toronto, ON	80,002	80,783	103,063	86,338
San Antonio, TX	60,530	75,200	122,285	86,191
Austin, TX	72,000	83,363	90,156	80,284

III. Certifications

Certifications do have value for IT security professionals. Whether you are demonstrating mastery of a specific skill or a broad understanding of the field, the benefits of holding certifications are both professional and personal. When asked if their organization uses certifications as a factor when determining salary increases, 41% of the respondents answered yes.

Do certifications help you get a job? This chart shows that 81% of respondents with hiring responsibilities do consider certifications a factor in their hiring decisions.



Respondents were asked to rank 63 industry certifications by importance. The chart below shows the top 25 certifications sorted by the "Very Important" column. Four certification bodies hold the top 15 certifications: GIAC (GCIH, GCIA, GCFA, GISP, GSEC, GCFW, GPEN, GCWN, GSE), Cisco (CCNA, CCNP, CCIE), (ISC)² (CISSP, SSCP), and ISACA (CISA).

Overall Certification Assessments

Certification	Not Important	A Bit Important	Somewhat Important	Very Important	Very Important
GCIH - GIAC Certified Incident Handler	16.4	25.6	14.4	11.0	32.6
Cisco CCNA	11.3	31.9	16.8	8.5	31.5
Cisco CCNP	15.8	30.1	15.6	7.9	30.5
GCIA - GIAC Certified Intrusion Analyst	16.3	26.4	15.4	11.3	30.5
(ISC) ² CISSP	8.6	15.8	8.2	37.6	29.8
GCFA - GIAC Certified Forensics Analyst	19.0	26.9	15.7	8.7	29.7
CISA (ISACA)	18.8	24.2	14.6	12.9	29.5
GPEN - Certified Penetration Tester	19.4	24.9	17.4	9.2	29.1
GISP - GIAC Security Professional Certification	15.4	30.4	16.3	8.9	29.0
(ISC) ² SSCP	19.3	25.3	15.2	11.8	28.4
Cisco CCIE	15.4	24.1	13.5	18.8	28.3
GCFW - GIAC Certified Firewall Analyst	17.5	29.0	16.8	8.6	28.1
GCWN - GIAC Certified Windows Security Admin	17.9	30.3	17.4	6.5	27.9
GSEC - GIAC Security Essentials Certification	14.7	30.0	16.6	10.7	27.9
Any GIAC Security Expert	16.8	27.8	16.2	11.9	27.3
GSNA - GIAC Systems/Network Auditor Certification	18.7	29.5	18.3	6.8	26.8
GISF - GIAC Security Fundamentals Certification	17.0	30.1	19.5	7.3	26.2
Any GIAC Software Security	20.0	30.4	19.9	6.2	23.5
Cisco CCDP	23.3	28.8	20.2	4.4	23.2
GREM - GIAC Reverse-Engineering Certification	26.3	25.0	20.5	6.2	22.0
G7799 - GIAC Certified ISO-17799 Specialist	24.4	30.3	17.7	5.9	21.7
Other GIAC Audit Certification	24.2	29.1	20.9	4.1	21.7
GCPM - GIAC Certified Project Manager	24.1	28.4	21.2	4.8	21.5
GSLC - GIAC Security Leadership Certification	21.8	29.9	20.3	6.5	21.5
Cisco CCDA	23.7	28.9	22.2	3.9	21.3

III. Certifications (Continued)

The next two charts reveal the importance of certifications by years of experience. The separations are 1-20 years of experience and 21+ years of experience.

Security professionals with 1 - 20 years of experience rate GIAC's GCIH number one. 10 other GIAC certifications ranked in the top 15. ISACA's CISA was ranked number two followed by (ISC)²'s SSCP at number three and CISSP at number 8.

Security Professionals with 1-20 Years of Experience

Certification	Not Important	A Bit Important	Somewhat Important	Important	Very Important
GCIH - GIAC Certified Incident Handler	9.2	24.7	13.0	14.5	38.6
CISA (ISACA)	10.4	27.7	12.6	14.0	35.4
(ISC) ² SSCP	10.2	25.8	15.1	14.0	35.0
GPEN - Certified Penetration Tester	12.0	26.5	16.2	11.5	33.8
GCIA - GIAC Certified Intrusion Analyst	9.4	27.4	14.4	15.0	33.7
GCFA - GIAC Certified Forensics Analyst	10.6	29.3	15.0	11.5	33.6
Any GIAC Security Expert Certification	9.2	27.3	15.7	14.3	33.5
(ISC) ² CISSP	2.4	13.7	6.2	45.4	32.2
GISP - GIAC Security Professional Certification	8.0	32.9	16.4	11.1	31.5
GCFW - GIAC Certified Firewall Analyst	10.8	30.1	16.3	11.7	31.1
GSNA - GIAC Systems/Network Auditor Certification	11.2	31.5	18.5	8.4	30.3
GSEC - GIAC Security Essentials Certification	7.9	31.0	16.4	14.8	29.9
GCWN - GIAC Certified Windows Security Admin	12.3	32.1	18.2	7.8	29.6
Cisco CCNP	13.4	33.6	15.4	8.1	29.4
Any GIAC Software Security Certification	13.5	31.2	19.0	7.4	29.0
Cisco CCNA	10.1	35.4	17.7	8.1	28.8
GISF - GIAC Security Fundamentals Certification	10.4	31.1	20.5	9.5	28.5
Cisco CCIE	14.7	24.6	12.3	21.1	27.4
GREM - GIAC Reverse-Engineering Certification	17.9	27.3	20.7	7.1	27.1
Other GIAC Audit Certification	16.8	32.0	20.1	5.5	25.6
G7799 - GIAC Certified ISO-17799 Specialist	16.9	32.5	17.6	7.6	25.4
GSLC - GIAC Security Leadership Certification	12.5	31.0	22.6	8.8	25.0
(ISC) ² Other	17.8	25.7	18.4	13.2	24.9
Other GIAC Security Administration Certification	14.1	33.3	23.0	5.6	24.0
GCPM - GIAC Certified Project Manager	17.3	29.3	23.3	6.7	23.3

III. Certifications (Continued)

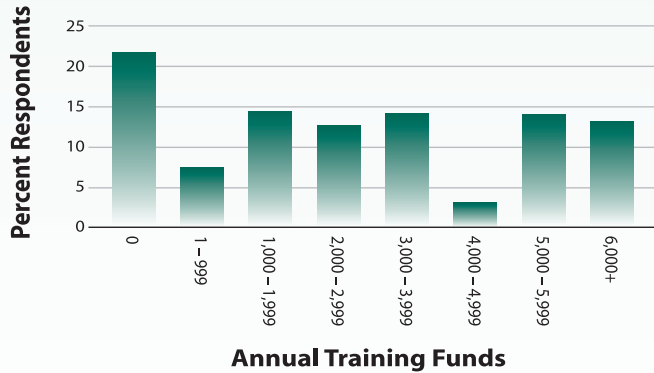
The order changes with security professionals with 21+ years of experience. For this group, GIAC's GCFA is number one followed by GCIH, GPEN, GCIA and GSEC. Nine other GIAC certifications rank in the top 15. ISACA's CISA ranked 17th with this group and CISSP was not in the top 25.

Security Professionals with 21+ Years of Experience

Certification	Not Important	A Bit Important	Somewhat Important	Important	Very Important
GCFA - GIAC Certified Forensics Analyst	7.7	15.4	23.1	10.3	43.6
GCIH - GIAC Certified Incident Handler	9.8	12.2	24.4	12.2	41.5
GPEN - Certified Penetration Tester	17.9	10.3	20.5	10.3	41.0
GCIA - GIAC Certified Intrusion Analyst	7.5	17.5	22.5	12.5	40.0
GSEC - GIAC Security Essentials Certification	6.7	28.9	17.8	8.9	37.8
GSNA - GIAC Certified Systems/Network Auditor	13.5	27.0	16.2	8.1	35.1
Any GIAC Certified Software Security	16.2	24.3	21.6	2.7	35.1
Other GIAC Audit Certification	21.6	16.2	21.6	5.4	35.1
GCFW - GIAC Certified Firewall Analyst	12.5	22.5	22.5	7.5	35.0
Any GIAC Security Expert Certification	12.5	25.0	20.0	7.5	35.0
GAWN - GIAC Certified Accessing Wireless Nets	15.8	21.1	28.9	0.0	34.2
GCWN - GIAC Certified Windows Security Admin	15.0	20.0	22.5	10.0	32.5
GCPM - GIAC Certified Project Manager	15.4	25.6	25.6	2.6	30.8
GISF - GIAC Security Fundamentals Certification	9.1	22.7	27.3	11.4	29.5
GREM - GIAC Reverse-Engineering Certification	18.4	18.4	21.1	13.2	28.9
Cisco CCIE	16.2	24.3	18.9	13.5	27.0
CISA (ISACA)	17.1	17.1	26.8	12.2	26.8
Other GIAC Security Administration Certification	17.9	25.6	25.6	5.1	25.6
G7799 - GIAC Certified ISO-17799 Specialist	11.4	36.4	20.5	6.8	25.0
GISP - GIAC Security Professional Certification	9.1	29.5	18.2	18.2	25.0
Other GIAC Management Certification	21.1	23.7	26.3	5.3	23.7
Cisco CCNP	20.6	35.3	14.7	5.9	23.5
Cisco CCNA	17.9	35.9	12.8	10.3	23.1
Microsoft MCS*	28.6	21.4	23.8	4.8	21.4
(ISC) ² Other	31.6	26.3	2.6	18.4	21.1

IV. Continuing Education

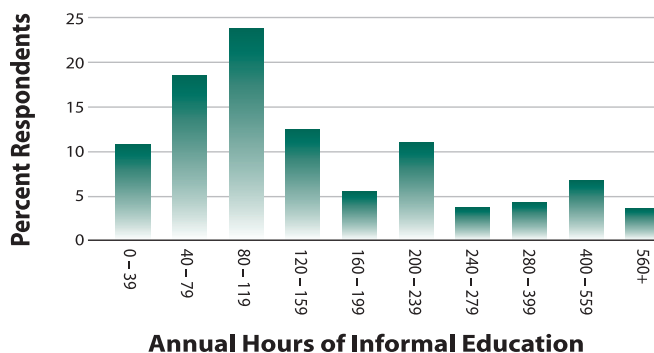
Training helps you stay current on the latest skills, techniques, and trends of the industry, which is vital in an industry that changes so rapidly. Participants were asked how much money they were allocated each year for training. Over 80% of respondents reported that their company did allocate funding for continuing education. Overall, the mean funding level was US\$2,854 per year with a median of US\$2,000 per year.



Training budgets do not vary much based on experience until the 20-year mark when we see a decrease of \$500 - \$1,000:

Training Budget by Experience		
Years' Exp	Mean	Median
0-4	\$2,946	\$2,000
5-10	\$2,898	\$2,500
11-15	\$2,863	\$2,000
16-20	\$3,169	\$2,500
20+	\$2,183	\$1,500

Informal education such as books, Web casts, and online forums are used to help information security professionals stay current on the latest industry trends. Respondents reported an overall mean of 201 hours a year of informal education – more than five weeks! The chart shows the distribution across all respondents:

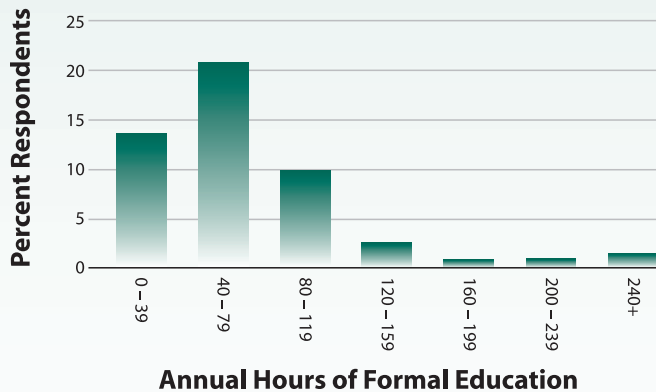


Mean training budgets vary considerably across industries with Accounting, Engineering, Utilities, Government (Military), and Aerospace leading the way. Industries not listed had insufficient samples for reasonable statistics.

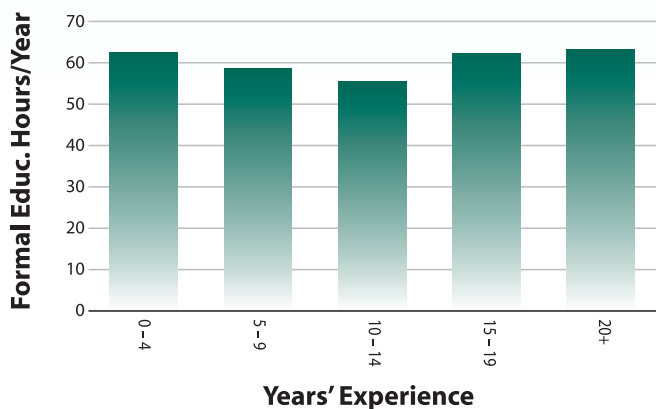
Annual Training Budget by Industry	
Industry	Budget
Accounting	\$4,839
Engineering	\$4,625
Utilities	\$3,682
Government (Military)	\$3,621
Aeronautical/aerospace	\$3,612
Not-for-profit	\$3,563
Value Added Reseller	\$3,508
Media	\$3,422
Manufacturing	\$3,226
Automotive	\$3,155
Defense	\$3,151
Computer hardware/semiconductor	\$3,131
Construction	\$3,063
State or Local Government	\$3,053
Banking/Finance/Insurance	\$3,032
Legal/Real Estate	\$3,008
Government - Contracting	\$2,973
Government (Non-Military)	\$2,928
Information Technology	\$2,907
Computer Software	\$2,832
Telecommunications	\$2,822
Healthcare, Medicine	\$2,695
Consulting and Business Services	\$2,652
Travel/Recreation/Entertainment	\$2,611
IT Company: ISP/ASP	\$2,595
IT Company: Security	\$2,568
Hospitality	\$2,500
Retail	\$2,400
IT Company: Consulting	\$2,356
Advertising, P.R., MarComm., or Marketing	\$2,222
Education	\$2,219
Transportation	\$2,177
Biotechnology	\$2,157
Business Services	\$2,108
Computer Services	\$1,987

IV. Continuing Education *(Continued)*

Formal training, such as taking courses online or in a classroom, averages 64 hours per year (median=40) over all participants.



There is little variation in the number of formal training hours by years of experience. Security professionals with 0-4, 15-19, and 20+ years of experience invest the most time in formal training while those with 10-14 years invest the least.



Industries with the highest number of formal training hours are Value-Added Resellers, the Military, and Law Enforcement. These industries receive three times the annual formal training hours as the lowest reported industries:

Annual Formal Training Hours by Industry

Industry	Hours/Year
Value-Added Reseller	97
Government (Military)	96
Law Enforcement	92
Defense	88
Aeronautical/aerospace	80
Biotechnology	74
Accounting	68
Not-for-profit	68
IT Company: Security	66
Government (Non-Military)	65
Computer hardware/semiconductor	64
Construction	64
Telecommunications	63
Government - Contracting	62
IT Company: Consulting	61
Automotive	60
Healthcare, Medicine	59
Utilities	59
Banking/Finance/Insurance	58
Business Services	58
Engineering	58
Food	58
Education	57
Information Technology	57
Manufacturing	56
Consulting and Business Services	54
Retail	54
Other	51
Travel/Recreation/Entertainment	51
State or Local Government	50
Hospitality	49
IT Company: ISP/ASP	48
Legal/Real Estate	48
Computer Services	47
Media	47
Computer Software	44
Transportation	44
Advertising, P.R., MarComm., or Marketing	32
IT Company: Other	32

IV. Continuing Education *(Continued)*

Respondents from the academic profession invest the most time in formal education, followed by security administrators, and project leaders (all with over 80 annual formal training hours):

Annual Formal Training Hours by Title			
Title	Hours/Year	Title	Hours/Year
Instructor • Professor • Educator	88	Penetration Tester	56
Security Administrator	82	VP (any division)	55
Project Leader	81	Security Auditor	54
Security Director • Manager	74	Systems Administrator	54
Chief Information Officer	73	Network Manager	53
Network Administrator	73	Systems Engineer	51
Director of Security	70	Audit Director	50
Information Security Officer	69	Analyst	49
Security Engineer • Architect	69	Engineer	48
Information Security Analyst • Admin • Specialist	68	Network Architect	45
Forensic • Pen Test • Intrusion Detection Analyst	67	Systems Manager	45
Law Enforcement • Investigator	67	Sales • Account Manager	43
Auditor	63	Director of Operations	34
Chief Information Security Officer	62	Chief Technology Officer	33
IT Director • Manager	62	Applications Programmer	29
Other	60	Systems Integrator	24

Respondents rated their interest in various technical areas for further training/education. Digital Forensics was the big winner with over 35% of respondents rating it Very Important (and almost 78% as Important or Very Important).

Areas of Interest for Technical Training					
Area of Interest	Not Important	A Bit Important	Somewhat Important	Important	Very Important
Digital Forensics	1.7	4.8	15.9	42.0	35.6
Intrusion Detection	4.0	10.4	23.4	36.8	25.4
Penetration Testing	4.0	10.6	22.5	37.5	25.3
Awareness and Understanding of Latest Threats	6.6	12.8	22.5	35.4	22.7
Incident Handling	5.5	12.8	27.1	33.9	20.7
Firewalls	5.2	14.0	24.8	36.0	20.0
Auditing	7.4	13.9	26.9	33.4	18.3
Wireless Security	7.4	13.9	25.9	34.8	17.9
Application Security	9.0	18.9	31.7	26.9	13.5

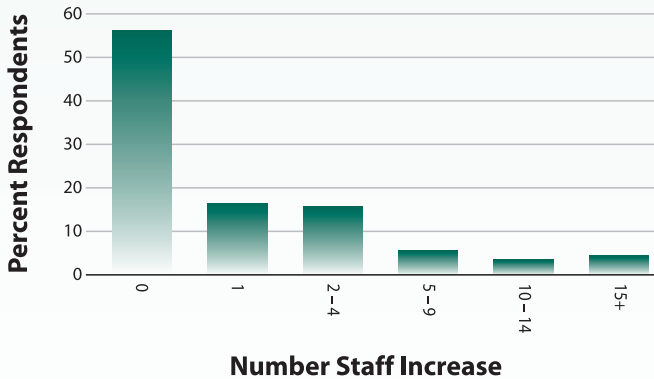
Respondents also rated non-technical areas of interest for further training/education. Broad/High-level Understanding of the Security Field was rated 41.8%, Very Important (78% combined Important + Very Important), followed by Management/Leadership and Legal knowledge.

Areas of Interest for Nontechnical Training					
Area of Interest	Not Important	A Bit Important	Somewhat Important	Important	Very Important
Broad • High-level Understanding of Security Field	1.9	5.6	14.5	36.2	41.8
Management • Leadership	4.0	7.4	17.2	38.7	32.7
Legal Knowledge	5.4	8.1	19.5	35.6	31.4
Business Skills	2.5	8.6	23.1	38.9	26.9
Security Essentials • Basics	3.1	8.8	22.8	39.5	25.8
Communications Skills	3.8	9.5	24.3	37.1	25.3
Security Policy Formulation and Application	5.1	16.2	34.9	31.8	11.9

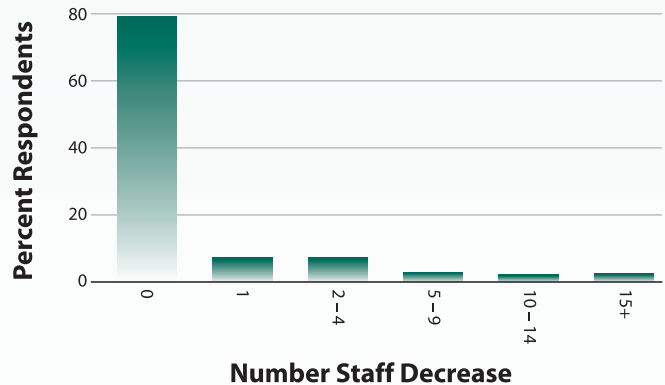
V. Twelve-month Outlook

We asked respondents about their organizations' forecast for 12 months with regard to personnel changes and technologies planned to deploy. Our first question was "What factors would cause your company to increase the number of security personnel?" Over 60% said compliance was the main reason their organization would add security personnel.

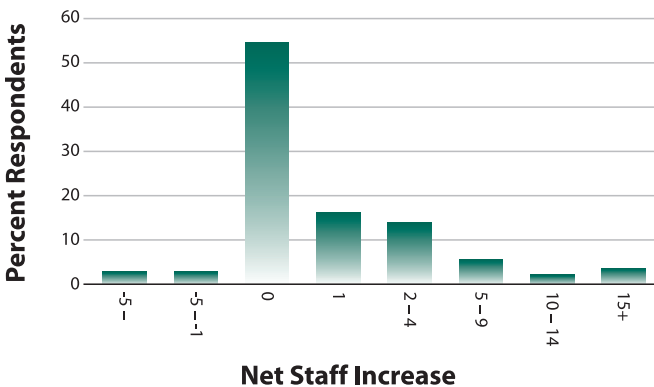
About 54.8% of respondents forecast no additional personnel for the next year. Even with all those 0's, the overall mean was 2.5 new staff members per respondent (obviously, the median was 0).



Just over 79% of respondents forecast no personnel reduction in the next 12 months. Even including those, the mean reduction was 1.3 personnel per respondent.



The net of the additions and reductions (on a per-respondent basis) has a mean of about 1.57% personnel added.



The best places to find an information security position are in the metro areas of Las Vegas, Nevada; Dallas, Texas; and Washington, DC.

Average Expected Number of Personnel to be Added	
Metro Area	# Added
Las Vegas, NV	5.9
Dallas, TX	4.0
Washington, DC	2.9
Phoenix, AZ	2.5
Atlanta, GA	2.0
Seattle/Redmond, WA	1.9
Houston, TX	1.8
Philadelphia, PA	1.7
Chicago, IL	1.5
San Diego, CA	1.5
Los Angeles/Orange County, CA	1.4
New York	1.1
Denver, CO	1.0

V. Twelve-month Outlook *(Continued)*

The net staff change varies widely across industries with Defense and IT security the big winners and Computer Services and Business Services the big losers.

Net Personnel Change by Industry

Industry	Net Change	Industry	Net Change
Defense	12.6	Automotive	0.5
IT Company: Security	8.4	Banking • Finance • Insurance	0.5
Computer Hardware • Semiconductor	5.9	Construction	0.5
Government (Military)	5.1	Consulting and Business Services	0.5
Aeronautical • Aerospace	4.7	IT Company: Other	0.5
Government - Contracting	4.5	Advertising • P.R. • MarComm. • Marketing	0.4
Hospitality	4.1	Chemical	0.4
Information Technology	4.0	Manufacturing	0.4
Accounting	3.0	Legal/Real Estate	0.3
Engineering	2.9	State or Local Government	0.3
Computer Software	2.7	Broadcasting • Cable • Video	0.2
Human Resources • Human Capital • Recruiter	2.5	Distribution • Warehousing	0.2
IT Company: Consulting	1.7	Not-for-profit	0.2
IT Company: Web Development • Webmaster	1.7	Environmental Services	0.0
Value Added Reseller	1.7	Other	0.0
Government (Non-Military)	1.2	Wholesale	0.0
Healthcare • Medicine	0.9	Biotechnology	-0.4
IT Company: ISP • ASP	0.8	Food	-0.4
Law Enforcement	0.8	Telecommunications	-0.4
Retail	0.7	Media	-0.7
Travel • Recreation • Entertainment	0.7	Transportation	-1.5
Education	0.6	Computer Services	-2.2
Utilities	0.6	Business Services	-3.8

V. Twelve-month Outlook *(Continued)*

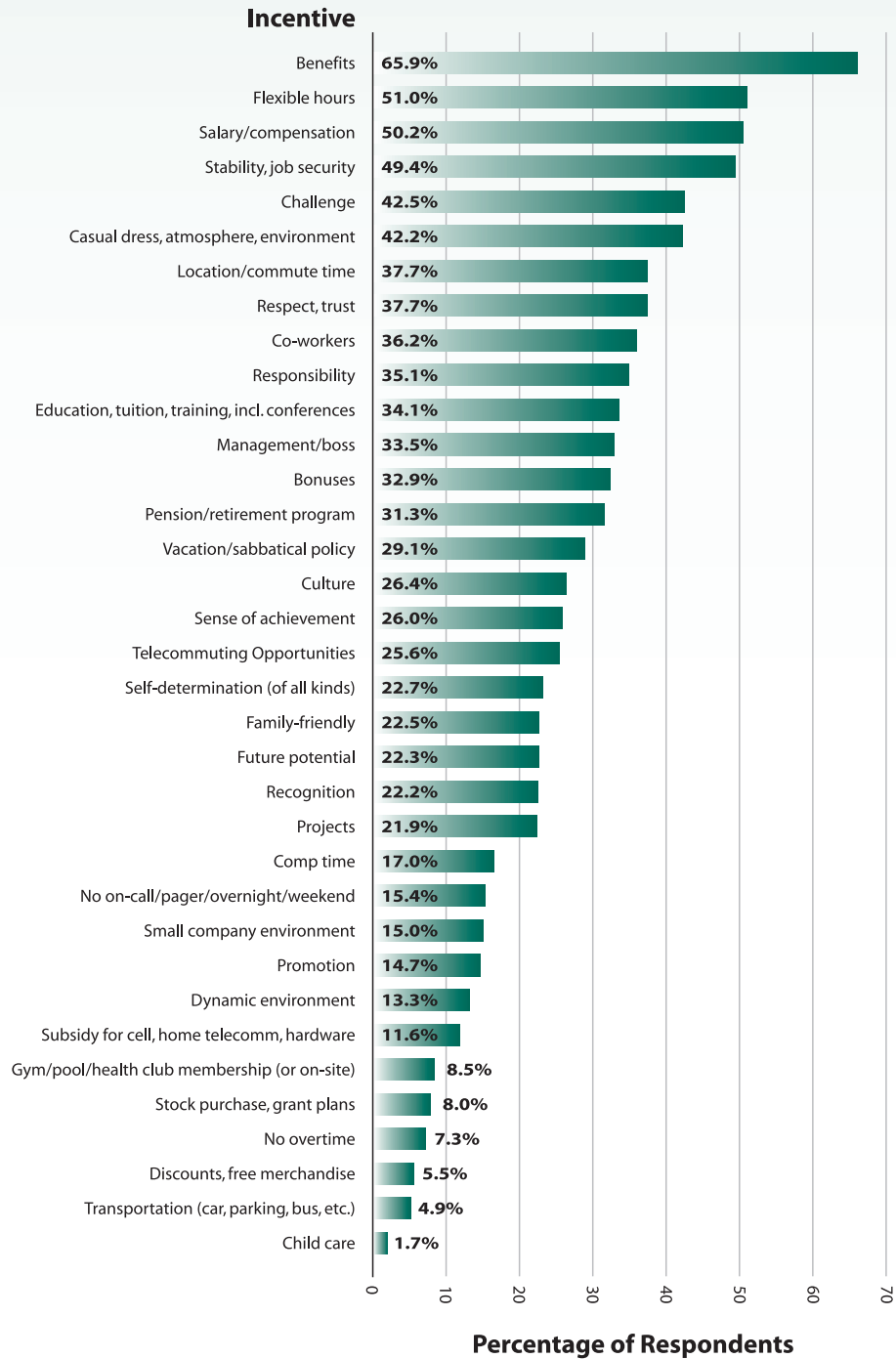
In response to which information security technologies respondents plan to implement in the next 12 months, over a quarter identified Configuration Management, SIEM (Security Information and Event Management), Storage Security and Wireless Security Solutions as their next technology deployments. This table is sorted by those technologies most predicted to be deployed within the next 12 months.

Planned Technology Deployments			
Technology	Already Implemented	Next 12 Months	Not in the Next 12 Months
Configuration management	60.8%	26.9%	12.3%
SIEM (Security Information and Event Management)	48.4%	26.6%	25.0%
Storage security	50.8%	25.8%	23.4%
Wireless security solutions	51.9%	25.8%	22.2%
Incident management	48.4%	24.7%	26.9%
Vulnerability assessment • management and penetration testing	57.5%	23.3%	19.2%
Risk management solutions	47.6%	23.1%	29.3%
Intrusion detection	41.7%	22.5%	35.7%
Biometrics	53.7%	22.1%	24.2%
Database security	32.5%	22.1%	45.4%
Business continuity and disaster recovery solutions	55.0%	21.4%	23.5%
Change management	44.4%	21.0%	34.6%
Identity and access management	33.1%	20.6%	46.3%
SIM (Security Information Management)	48.2%	18.4%	33.4%
Web application security	68.5%	17.8%	13.7%
Problem management	63.6%	17.5%	18.8%
Compliance management	53.5%	13.4%	33.1%
Cryptography	16.3%	9.2%	74.5%

V. Twelve-month Outlook *(Continued)*

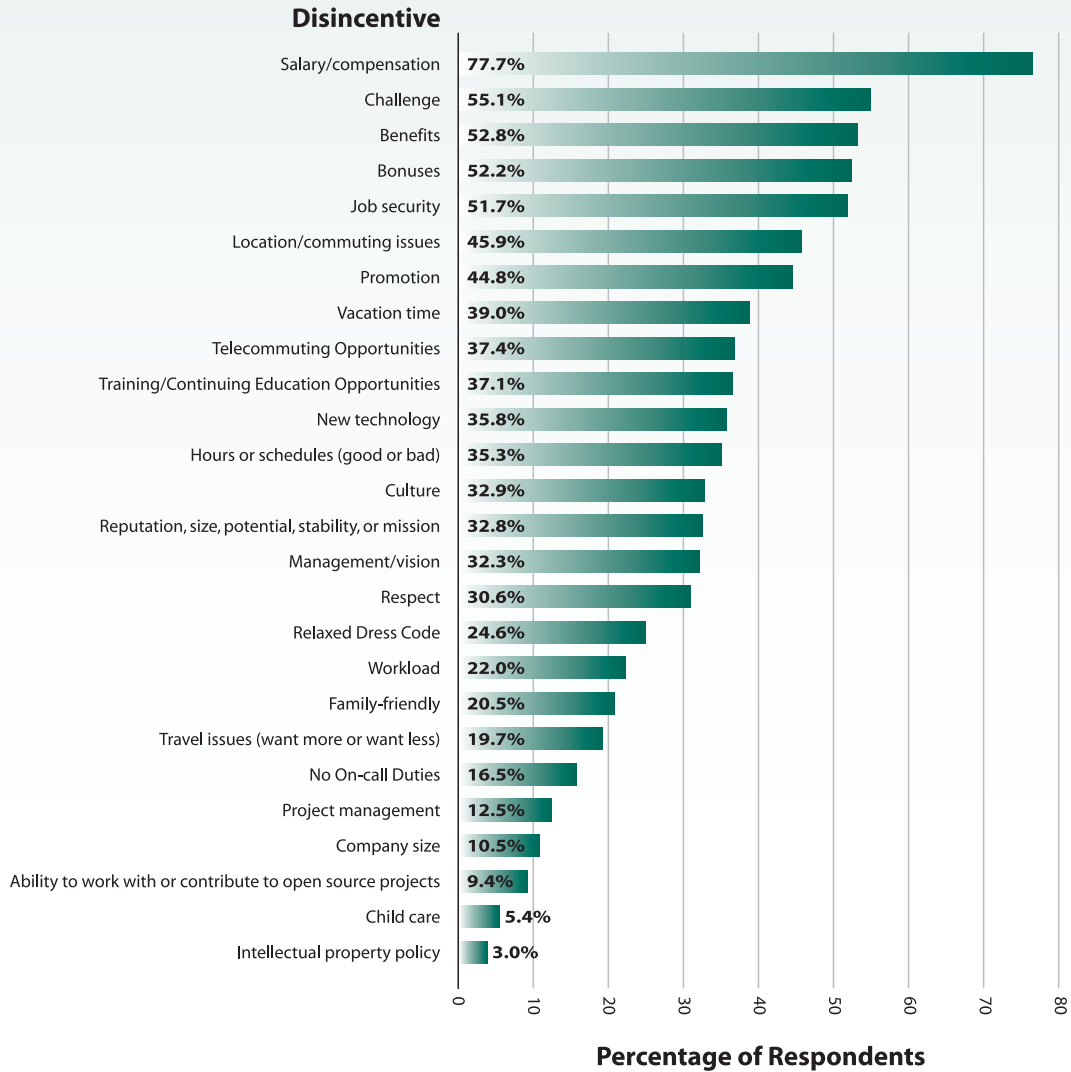
Incentives

What incentives do security professionals find valuable? Benefits took the lead with 66%, flexible hours 51%, salary 50%, and stability with 49%. Here's the complete list of incentives that encourage employees to stay with their current employer:



V. Twelve-month Outlook *(Continued)*

On the flip side, we asked which of these incentives would encourage respondents to consider changing jobs. Salary (78%), challenge (55%), benefits (53%), and bonuses (52%) were the top answers.



V. Twelve-month Outlook *(Continued)*

Conclusion

Despite the current economy, the demand for qualified information security professionals is predicted to increase through 2016, according to the Bureau of Labor Statistics. Those with formal education and professional certifications have the best opportunities to advance their careers as well as their salaries.

Security threats reached their highest levels in 2008 and are predicted to increase in 2009. With external as well as internal threats, commercial organizations, financial institutions, state and local governments and the military will continue to require qualified information security professionals to protect their systems and data. With an average entry-level (0 - 2 years of experience) salary of \$70,807, security professionals are expected to hold a certain level of education, certifications, and experience as well as pursue a variety of informal and formal continuing education efforts to stay current in the industry.

The results of the SANS 2008 Salary and Certification Survey provided the following conclusions:

- 81% of respondents with hiring responsibilities consider certification a factor in their hiring decisions.
- 41% of the respondents said their organizations use certifications as a factor when determining salary increases.
- In an overall certification assessment, 11 GIAC certifications were ranked in the top 15 very important certifications in the industry.
- The most experienced security professionals (those with 20+ years in the industry) ranked 15 GIAC certifications among the top 15 very important certifications.
- As of late November 2008, just over 79% of respondents forecast no personnel reductions in the next 12 months.
- Formal training, such as taking courses online or in a classroom, averages 64 hours per year (median=40) over all participants.
- Formal education is also a key factor in IT security salaries. 75% of respondents hold a Bachelor's Degree or higher and earn an average entry-level salary of \$70,807.00.



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