2017
IT Skills and Salary Report

A Comprehensive Study from Global Knowledge

Global Knowledge ®

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10 YEARS

This marks the 10th consecutive year we've surveyed men and women in IT about the state of the industry. The IT landscape has changed substantially over the past decade, but each year we've remained committed to presenting you with in-demand skills and certifications, the methods used to keep skills up-to-date, the challenges and concerns of IT staff and decision-makers, the value of training, and, of course, your salaries. Our survey is the largest of its kind and the report would not be what it is today without your participation and support from AWS, Cisco, Citrix, ISACA, Microsoft and numerous others that have helped.

Thank you.

INTRODUCTION

For the 10th year at Global Knowledge, we've surveyed the world's IT professionals to learn about their skills, their salaries and the factors that influence both.

In previous versions of our IT Skills and Salary Report, we focused only on the responses we received from professionals in the United States and Canada. This year, we've gone global, including data from Europe, the Middle East and Africa (EMEA); Latin America; and the Asia-Pacific region, along with data from the U.S. and Canada.

In the fall of 2016, Global Knowledge and partner companies emailed more than half a million survey invitations to recipients in their databases. More

than 14,300 respondents worldwide completed the survey. This report focuses on the 87 percent of those who defined their roles as IT professionals, that is, IT staff members and the IT decision-makers who lead them.

We found that though IT professionals' salaries vary, sometimes drastically, IT departments around the world face similar challenges and demand similar skill sets.

RESPONDENT DEMOGRAPHICS

Residing Country or Region

United States	38%
Canada	13%
Latin America	6%
EMEA*	26%
Asia-Pacific	16%

Job Role

IT Decision-Maker ■ **IT Staff** ■

	IT Decision-Maker	IT Staff
United States	1,583	3,219
Canada	429	1,178
Latin America	235	504
EMEA	1,101	2,191
Asia-Pacific	582	1,475

Average Age

United States	43
Canada	42
Latin America	35
EMEA	38
Asia-Pacific	35

Gender

Male ■ **Female** ■
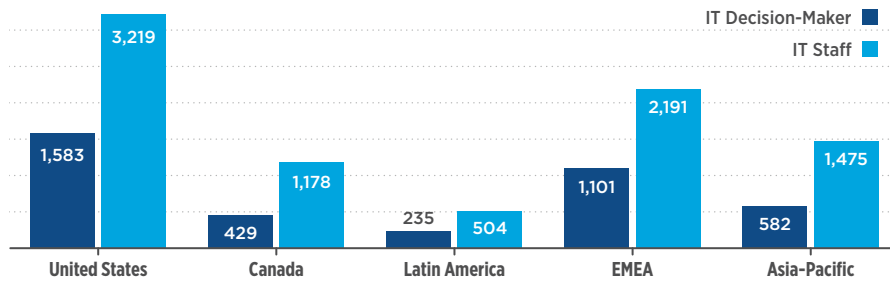
	Female	Male
United States	17%	83%
Canada	23%	77%
Latin America	12%	88%
EMEA	9%	91%
Asia-Pacific	8%	92%

Tenure

5 Years or Less ■ **6–10 Years** ■ **11–15 Years** ■ **16–20 Years** ■ **21 Years or More** ■

	5 Years or Less	6–10 Years	11–15 Years	16–20 Years	21 Years or More
United States	18%	17%	19%	22%	25%
Canada	16%	20%	20%	18%	25%
Latin America	32%	27%	18%	13%	9%
EMEA	23%	25%	20%	18%	14%
Asia-Pacific	29%	28%	20%	12%	11%

College Degree

United States	71%
Canada	57%
Latin America	67%
EMEA	65%
Asia-Pacific	81%

*Europe, the Middle East and Africa

PRIMARY FINDINGS

SKILLS GAPS ARE A GLOBAL CONCERN

More than two-thirds of the IT decision-makers responding to the survey reported a gap between their team's skill levels and the knowledge required to achieve organizational objectives. IT decision-makers from Silicon Valley to Cairo and from Dublin to Auckland reported that skills gaps lead to higher levels of employee stress, lower likelihood of meeting quality objectives, and delays in development and deployment.

CLOUD COMPUTING, CYBERSECURITY AND NETWORKING SKILLS ARE IN DEMAND

Respondents worldwide agree that primary focus areas in their organizations are cloud computing, cybersecurity and networking. At the same time, 31 percent of IT decision-makers reported having the most difficult time finding qualified cybersecurity talent, and 28 percent said cloud computing is a challenging hiring area. The salaries of the respondents who work in these areas reflect the demand. Those in security positions reported the highest overall salaries, and those in cloud computing positions reported the fifth highest.

CERTIFICATIONS MATTER

Respondents across the board noted direct benefits of IT professionals being certified, including increased productivity, faster troubleshooting and fewer skills gaps. In all regions, certification pays off financially as well. In the U.S. and Canada, the difference between salaries of certified and noncertified IT staff is nearly $8,400, or 11.7 percent. Outside of the U.S. and Canada, the difference ranges from 6.4 percent in the Asia-Pacific region to 12.8 percent in EMEA. Certified IT decision-makers in the U.S. and Canada earn $9,201, or 8.9 percent, more than their noncertified peers. The gap is larger, on average, outside of the U.S. and Canada: 29.7 percent in Asia-Pacific, 27.9 percent in Latin America and 13 percent in EMEA.

AVERAGE SALARIES ARE UP IN THE U.S. AND CANADA

Since this is the first year that we've reported on global salaries, when it comes to salary trends over time, we can only make conclusions regarding those in the U.S. and Canada. The news is good: reversing a decline in 2016, salaries for IT professionals in the U.S. and Canada are up an average of 5.7 percent, which translates to $3,958. Overall, salaries for IT professionals in the U.S. and Canada average $88,640, with a median of $82,000. The difference in average salaries for IT decision-makers versus IT staff is $32,963, or 42 percent, and salaries in the U.S. average 32 percent higher than those in Canada ($94,413 versus $71,633).

Salaries for IT professionals outside of North America vary considerably due to many factors, including cost of living, education, experience, certifications and industry. For example, salaries for IT decision-makers range from the mid-$20,000s for most of Africa up to $49,000 for southern Africa. Similar roles in the Middle East net substantially higher salaries, typically ranging from $71,000 to $83,000. IT staff salaries vary just as widely. In parts of Africa and Central America, it is common for IT staff to earn an average of between $12,000 and $19,000. This shifts up by a magnitude of three to four in more developed markets such as Europe, the Middle East and parts of Asia.

BUSINESS IS GOOD, BUT WORKLOADS ARE HEAVY

Globally, 59 percent reported that business conditions range from growing slowly to significantly improving. However, when factoring in workload management and hiring challenges, the outlook is not as strong. Nearly two-thirds of respondents indicated their workloads are challenging, with 40 percent reporting workloads that are either very challenging or the worst they've seen. Further, nearly two-thirds of IT decision-makers reported that hiring qualified talent is a significant issue.
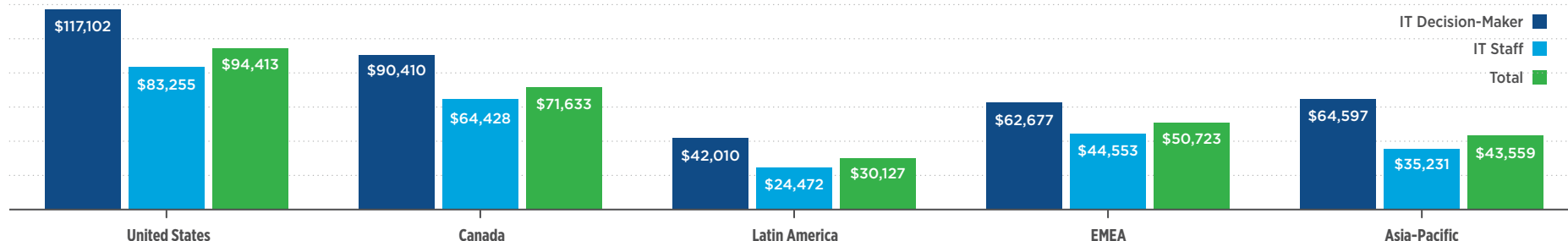
COMPENSATION

WITH SALARIES RANGING FROM **$36,065 IN LATIN AMERIC**A TO

$112,764 IN THE U.S. AND CANADA, POSITIONS IN SECURITY COMMAND

THE HIGHEST AVERAGE GLOBAL SALARY AT **$87,580**.

An employee's compensation is determined by a combination of factors, including education, responsibility level, job role, certification, tenure, industry, company size and geography—even global and regional economies.

In this year's IT Skills and Salary Survey, we asked respondents about those factors and discovered variations around the globe, starting with base salaries. We converted salaries into U.S. dollars to enable relevant comparisons. Both mean (average) and median salaries are referenced throughout the report, and both should be considered when making comparisons. Average is calculated by dividing a sum by the number of quantities added together, whereas median is the point where half are above and half are below.

IT professionals in the U.S. earn higher salaries than their counterparts in any other country. In the case of Latin America, the U.S. salaries are as much as 3.4 times higher. A clear distinction across all geographies is the ratio of IT decision-makers' salaries compared to the salaries of the employees they manage. In the U.S. and Canada, IT managers earn an average of 42 percent more than their staffs. This ratio is comparable to EMEA's 41 percent difference. In Latin America and Asia-Pacific, IT decision-makers report much larger differentials, earning 72 and 83 percent more than their staffs, respectively.

BASE SALARY

	IT Decision-Maker	IT Staff	Total
United States	$117,102	$83,255	$94,413
Canada	$90,410	$64,428	$71,633
Latin America	$42,010	$24,472	$30,127
EMEA	$62,677	$44,553	$50,723
Asia-Pacific	$64,597	$35,231	$43,559

RAISES AND BONUSES

Between one-half and two-thirds of respondents, depending upon region, received a raise in the prior year. The median raise for IT decision-makers ranges from 1 percent in EMEA to 5 percent in Latin America. Raises for IT staff are somewhat more generous with the median ranging from 1.4 percent to 5.9 percent.
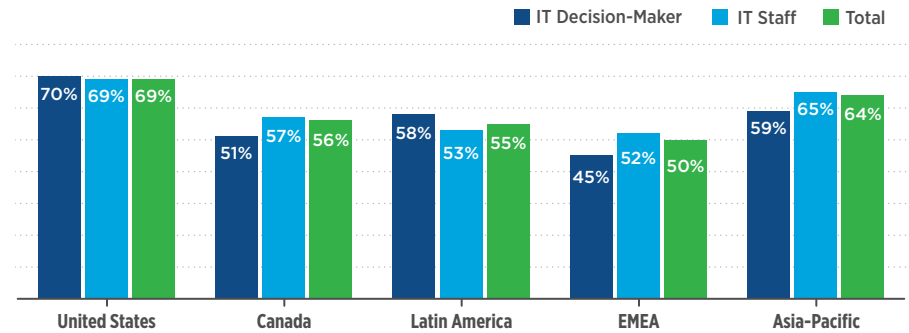
Thirty-nine percent of the respondents who received a raise attribute it primarily to their job performance. Standard company increase is the second most frequently mentioned reason.

The reason for a raise impacts the amount of the raise. External promotions or lateral moves garner the largest average salary increase. For example, U.S. respondents who moved to another company reported raises averaging between 13 and 19 percent. Internal promotions also lead to salary increases but to a lesser extent than external moves.

Respondents who received raises driven by skills development, including achieving new certifications, reported increases of 9 to 16 percent in the U.S., 9 to 18 percent in Canada, and even higher in other regions. Respondents who took on additional responsibilities or developed new skills that added value— not necessarily related to a certification—typically reported raises averaging 7 to 13 percent.

Bonus eligibility varies between region and job function. Though IT decision-makers are typically more likely to be eligible for a bonus than the staff they manage, between 15 and 23 percent of those who were eligible did not receive a bonus, largely due to economic reasons facing their organization. IT staff reported a similar trend.

RECEIVED A RAISE

Legend: IT Decision-Maker | IT Staff | Total

Region	IT Decision-Maker	IT Staff	Total
United States	70%	69%	69%
Canada	51%	57%	56%
Latin America	58%	53%	55%
EMEA	45%	52%	50%
Asia-Pacific	59%	65%	64%

RAISE PERCENTAGE

Region	IT Decision-Maker	IT Staff
United States	5.1%	6.4%
Canada	5.8%	4.8%
Latin America	14.3%	18.5%
EMEA	8.3%	10.2%
Asia-Pacific	11.6%	14.7%

RECEIVED A BONUS

IT Decision-Maker: Eligible, Received Bonus | Eligible, No Bonus
IT Staff: Eligible, Received Bonus | Eligible, No Bonus

Region	IT Decision-Maker: Eligible, Received Bonus	IT Decision-Maker: Eligible, No Bonus	IT Staff: Eligible, Received Bonus	IT Staff: Eligible, No Bonus
United States — Avg. Bonus: $5,838	49%	9%	44%	8%
Canada — Avg. Bonus: $4,266	51%	9%	40%	7%
Latin America — Avg. Bonus: $2,149	49%	14%	35%	16%
EMEA — Avg. Bonus: $2,974	48%	11%	43%	13%
Asia-Pacific — Avg. Bonus: $2,791	48%	12%	46%	15%

RESPONSIBILITY LEVEL

We compared respondents' compensation data, including base salary plus bonus if applicable, to their levels of responsibility on the job, ranging from entry-level to executive levels.

Entry-level IT staff (specialists, analysts, associates, level 1, etc.) account for 20 percent of this year's respondents. Average entry-level salaries range from $18,651 in Latin America to $61,402 in the U.S. and Canada, with a global average of $43,934. Typical job roles include senior help desk specialist, network technician and business systems analyst.

Mid-level professionals (managers and team leads) form the core of this year's respondent base, accounting for 48 percent. The average salary for these mid-level IT pros who have job roles such as manager of information security, manager of network operations and manager of applications systems architecture is $65,470, with a median of $65,000. Average salaries range from $28,430 for Latin American respondents to $84,513 for those in the U.S. and Canada. Mid-level IT managers in EMEA average $48,975, and their counterparts in the Asia-Pacific region average $41,118. Of the major countries represented, participants from India reported the lowest average salary, ranging from $15,000 to $18,142.

Respondents in senior-level roles account for 29 percent of this year's participants, with titles such as director of systems engineering, vice president or director of corporate applications, and vice president or director of enterprise infrastructure. Average salary for these positions exceeds $85,200, with a median of $83,000. Salaries for senior-level respondents are lowest in Latin America where the average is $40,733. Their counterparts in the U.S. and Canada earn an average of $110,401.

Executives with roles such as president, partner and CxO account for 3 percent of technical respondents and reported an average salary of $101,992, with a median of $85,000. Executives in Australia, Japan, Germany and the U.S. reported the highest average salaries, ranging from $144,184 to $158,000.

Entry-level respondents earn an average of 43 cents to every dollar an executive-level respondent earns, and the average salary for mid-level respondents is 49 percent higher than that of entry-level IT professionals. Respondents in senior positions realize a bump of 30 percent over their mid-level counterparts, and executives typically see a bump of 20 percent over their direct reports.

SALARY BY RESPONSIBILITY LEVEL

Level	Mean	Median	Count	Percent
U.S. & Canada				
Entry	$61,402	$58,750	1,199	19%
Mid	$84,513	$80,000	3,198	50%
Senior	$110,401	$105,000	1,836	29%
Executive	$118,300	$100,000	199	3%
Total	$88,640	$82,000	6,432	100%
Latin America				
Entry	$18,651	$15,606	201	27%
Mid	$28,430	$24,000	303	41%
Senior	$40,733	$36,400	215	29%
Executive	$57,181	$45,925	20	3%
Total	$30,127	$24,000	739	100%
EMEA				
Entry	$35,522	$30,000	706	21%
Mid	$48,975	$44,000	1,485	45%
Senior	$61,639	$56,738	1,009	31%
Executive	$75,864	$67,100	92	3%
Total	$50,723	$45,000	3,292	100%
Asia-Pacific				
Entry	$21,428	$11,120	441	21%
Mid	$41,118	$25,000	1,034	50%
Senior	$60,744	$47,689	528	26%
Executive	$103,007	$74,925	54	3%
Total	$43,559	$25,000	2,057	100%
Total				
Entry	$43,934	$44,375	2,547	20%
Mid	$65,470	$65,000	6,020	48%
Senior	$85,206	$83,000	3,588	29%
Executive	$101,992	$85,000	365	3%
Total	$67,810	$64,000	12,520	100%

IT FUNCTIONAL AREAS

Salaries vary considerably by respondents' job functional area. More than two-thirds of respondents work in four of the 11 primary job functional areas: systems, enterprise and architecture (23 percent); networking and infrastructure (22 percent); help desk, support and service management (13 percent); and cybersecurity (11 percent).

With salaries ranging from $36,065 in Latin America to $112,764 in the U.S. and Canada, positions in cybersecurity command the highest average global salary at $87,580. That's a 6 percent differential over project management, the second highest-paying functional area with an average global salary of $82,567.

Respondents working in data management, analytics and business intelligence rank third, with an average global salary of $80,308 and a median of $75,000. Those in systems, enterprise and architecture rank fourth, with an average global salary of $75,953 and a median of $74,500.

Positions in cloud computing have the fifth highest salary globally, however in the U.S. and Canada, these positions bring in the highest average salary at $114,043, with a median of $100,125.

SALARY BY FUNCTIONAL AREA

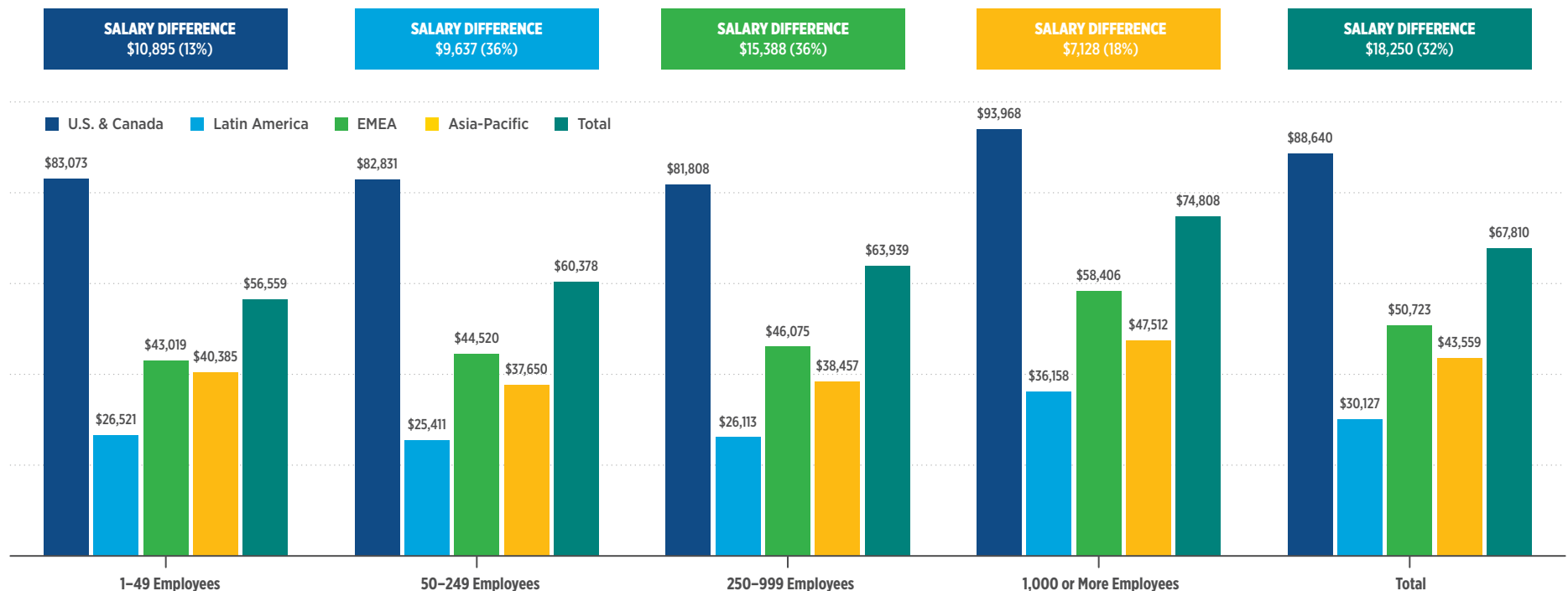| Functional Area	U.S. & Canada			Latin America			EMEA			Asia-Pacific			Total		
	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Application Development / Programming	$90,639	$86,000	511	$25,281	$19,000	41	$46,716	$45,483	203	$44,907	$30,000	141	$70,500	$67,500	896
Business Analysis	$78,094	$70,000	237	$40,134	$34,130	8	$55,338	$51,000	39	$61,161	$45,500	30	$72,683	$68,625	314
Business Operations	$89,536	$80,000	172	$52,370	$49,000	10	$49,340	$44,561	52	$49,852	$38,709	50	$73,881	$68,000	284
Cloud Computing	$114,043	$100,125	186	$45,441	$35,104	22	$57,510	$56,500	153	$45,648	$19,019	128	$75,365	$69,000	489
Cybersecurity	$112,764	$110,000	641	$36,065	$31,200	81	$68,351	$67,500	385	$67,462	$60,332	227	$87,580	$86,848	1,334
Data Management / Analytics / Business Intelligence	$89,497	$84,000	331	$19,536	$18,750	13	$51,848	$44,800	78	$78,919	$75,000	23	$80,308	$75,000	445
Help Desk / Support / Service Management	$59,670	$54,570	876	$18,851	$14,400	79	$33,933	$29,850	399	$33,516	$19,702	220	$47,441	$46,043	1,574
Networking / Infrastructure	$79,873	$75,000	1,079	$25,023	$18,500	239	$35,340	$28,633	774	$24,760	$11,770	577	$50,132	$47,000	2,669
Project / Program Management	$95,878	$90,000	528	$36,893	$31,000	28	$66,087	$57,650	148	$51,914	$37,250	108	$82,567	$76,944	812
Systems / Enterprise / Architecture	$94,026	$88,489	1,479	$34,977	$31,475	96	$60,815	$56,187	764	$47,225	$32,500	391	$75,953	$74,500	2,730
Telecommunications	$79,626	$75,000	203	$23,634	$16,400	64	$38,965	$27,500	143	$26,210	$13,043	79	$51,778	$47,000	489
Total (Excludes "Other" Job Functions)	$87,722	$81,000	6,243	$28,531	$22,500	681	$49,737	$44,393	3,138	$41,253	$23,000	1,974	$66,848	$63,138	12,036

INDUSTRY

The military and homeland defense segment of the public sector gets the top ranking for average salary due primarily to its strength in the Asia-Pacific region (global average of $89,077 and median of $83,550). This industry drops to fifth in the U.S. and Canada, ninth in EMEA and 21st in Latin America. Integrators for information systems (IS) and value-added resellers (VAR) hold the top ranking in the U.S. and Canada with an average salary of $110,108 and a median of $112,000.

COMPANY SIZE

Our past surveys have consistently revealed that IT professionals earn higher salaries at larger companies than at smaller ones. That's true this year, no matter the respondents' region. Globally, the difference between average salaries at the largest and smallest firms is $18,250, or 32 percent. That difference is significantly greater for companies in Latin America and EMEA (36 percent each) than it is for those in the U.S. and Canada and Asia-Pacific (13 and 18 percent, respectively).

SALARY BY NUMBER OF EMPLOYEES

SALARY DIFFERENCE $10,895 (13%)	SALARY DIFFERENCE $9,637 (36%)	SALARY DIFFERENCE $15,388 (36%)	SALARY DIFFERENCE $7,128 (18%)	SALARY DIFFERENCE $18,250 (32%)

Legend: U.S. & Canada — Latin America — EMEA — Asia-Pacific — Total

1–49 Employees
- U.S. & Canada: $83,073
- Latin America: $26,521
- EMEA: $43,019
- Asia-Pacific: $40,385
- Total: $56,559

50–249 Employees
- U.S. & Canada: $82,831
- Latin America: $25,411
- EMEA: $44,520
- Asia-Pacific: $37,650
- Total: $60,378

250–999 Employees
- U.S. & Canada: $81,808
- Latin America: $26,113
- EMEA: $46,075
- Asia-Pacific: $38,457
- Total: $63,939

1,000 or More Employees
- U.S. & Canada: $93,968
- Latin America: $36,158
- EMEA: $58,406
- Asia-Pacific: $47,512
- Total: $74,808

Total
- U.S. & Canada: $88,640
- Latin America: $30,127
- EMEA: $50,723
- Asia-Pacific: $43,559
- Total: $67,810

SALARY BY INDUSTRY

Industry	U.S. & Canada			Latin America			EMEA			Asia-Pacific			Total		
	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
IS and VAR Integration	$110,108	$112,000	51	$39,121	$42,000	7	$48,672	$48,000	29	$80,226	$64,821	14	$83,406	$75,000	101
IT Consulting	$101,761	$93,525	594	$30,691	$24,335	158	$56,860	$52,974	534	$46,382	$27,300	371	$68,115	$60,000	1,657
Pharmaceutical, Medical, Biotech	$100,132	$100,000	73	$29,780	$29,780	2	$61,117	$48,750	27	$34,219	$20,819	14	$81,883	$70,750	116
Banking and Finance	$98,495	$93,000	679	$36,504	$33,000	75	$58,680	$52,000	379	$51,679	$36,000	226	$76,185	$75,000	1,359
Government: Military and Homeland Security	$98,356	$94,000	211	$23,294	$18,600	5	$52,564	$41,320	49	$99,097	$75,775	16	$89,077	$83,550	281
Aerospace / Defense	$95,954	$90,000	130	$24,875	$24,875	2	$59,819	$60,000	37	$100,349	$65,778	9	$87,866	$82,443	178
Media, Film, Music	$94,893	$94,640	49	$48,425	$16,375	4	$46,986	$42,000	39	$48,702	$47,250	12	$69,811	$70,000	104
Retail	$92,147	$83,000	181	$21,420	$19,000	15	$60,550	$50,000	69	$52,829	$53,000	31	$77,080	$70,425	296
IT-Related Services	$91,059	$83,000	685	$29,355	$26,000	113	$48,270	$44,000	653	$33,210	$18,000	543	$57,796	$50,000	1,994
Professional Business Services	$91,029	$83,920	147	$25,950	$19,000	19	$56,310	$51,343	75	$60,866	$72,500	31	$73,472	$70,000	272
Insurance, Real Estate, Legal	$90,798	$86,250	321	$51,832	$25,500	11	$62,680	$53,500	82	$55,827	$59,850	40	$81,694	$77,096	454
IT Communication Manufacturing	$87,179	$80,000	86	$40,212	$22,500	15	$46,409	$35,750	82	$35,638	$16,556	77	$56,347	$47,662	260
Hospitality, Travel and Recreation	$87,067	$84,000	66	$27,637	$18,432	4	$39,990	$29,957	26	$67,085	$28,530	20	$71,021	$59,400	116
Manufacturing: Consumer	$86,695	$80,180	157	$32,209	$28,546	10	$52,553	$45,600	43	$46,764	$40,000	30	$73,316	$71,875	240
Transportation or Public Utilities	$85,099	$80,000	186	$17,678	$15,688	10	$47,981	$39,608	58	$68,958	$71,165	26	$73,504	$73,813	280
Natural Resources: Mining, Oil or Gas	$84,870	$80,000	110	$28,582	$26,000	11	$47,207	$31,553	56	$33,850	$23,879	24	$65,204	$67,000	201
Healthcare	$84,629	$80,000	575	$28,856	$30,000	9	$51,887	$51,000	81	$46,152	$47,000	58	$77,180	$75,000	723
Manufacturing: Industrial	$84,094	$74,358	192	$25,742	$17,000	21	$51,711	$45,000	105	$37,872	$20,000	45	$65,621	$60,000	363
Telecommunications	$83,768	$77,900	231	$27,213	$20,784	116	$38,789	$27,850	267	$37,193	$20,000	169	$49,999	$42,000	783
Wholesale	$81,619	$78,000	45	$18,140	$15,651	3	$60,261	$48,000	23	$47,772	$49,336	7	$69,842	$68,500	78
Government: Nondefense, State, Local	$81,052	$75,000	556	$29,833	$22,489	36	$43,971	$42,500	135	$67,491	$67,000	55	$71,339	$68,210	782
Natural Resources: Agriculture, Forestry, Fishing	$80,783	$78,000	25	$17,521	$17,521	2	$47,939	$43,750	12	$44,406	$43,500	4	$65,291	$66,000	43
Construction, Architecture, Engineering	$79,002	$71,000	122	$46,533	$31,000	10	$51,305	$47,175	72	$41,721	$21,700	43	$63,124	$60,000	247
Communications, Public Relations, Advertising	$78,865	$75,000	59	$35,578	$30,000	15	$45,137	$42,500	30	$15,409	$4,500	9	$59,111	$55,000	113
Nonprofit	$73,443	$66,278	116	$21,500	$16,723	4	$41,992	$35,000	29	$38,951	$32,402	10	$64,230	$62,000	159
Education Services	$72,080	$69,000	490	$22,873	$17,000	22	$36,434	$35,000	145	$39,050	$27,676	73	$60,214	$60,000	730
Other	$85,964	$78,780	295	$26,162	$20,900	40	$49,454	$40,000	155	$40,907	$18,125	100	$64,681	$59,188	590
Total	$88,640	$82,000	6,432	$30,127	$24,000	739	$50,723	$45,000	3,292	$43,559	$25,000	2,057	$67,810	$4,000	12,520

GLOBAL VARIATIONS

A region's cost of living is one of the strongest drivers behind salary. For insight into how strong, we compared the salaries of respondents in 13 regions. Average salaries for IT decision-makers are greatest in the U.S. and Canada at $111,174, with a median of $104,366, and lowest in West Africa at $22,693, with a median of $9,464. Salaries for IT staff show a similar trend, with respondents in the U.S. and Canada averaging $78,211, with a median of $73,500, versus their West African counterparts who average $13,382, with a median of $11,000. Essentially, for every dollar that an IT professional in the U.S. and Canada earns, their West African counterpart earns 17 cents.

Oceania, including Australia, New Zealand and the Pacific Islands, has the highest combined average IT salary at $90,031 (median of $85,000) or two percent greater than the average of $88,640 (median of $82,000) in the U.S. and Canada. The difference between Oceania's average and the combined average for West Africa ($14,464 with a median of $10,000) exceeds $75,500, or 522 percent.
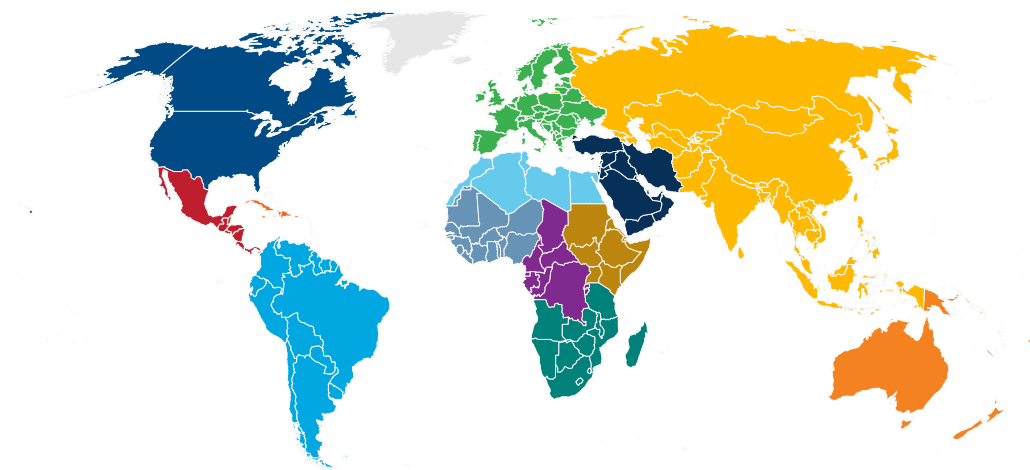
1. OCEANIA
MEAN: $90,031

2. U.S. AND CANADA
MEAN: $88,640

3. MIDDLE EAST
MEAN: $62,757

4. EUROPE
MEAN: $55,418

5. SOUTHERN AFRICA
MEAN: $37,181

6. SOUTH AMERICA
MEAN: $32,341

7. ASIA
MEAN: $31,576

8. CARIBBEAN
MEAN: $31,496

9. MIDDLE AFRICA
MEAN: $26,470

10. CENTRAL AMERICA
MEAN: $23,626

11. EAST AFRICA
MEAN: $17,274

12. NORTH AFRICA
MEAN: $15,914

13. WEST AFRICA
MEAN: $14,464

NOTE: For a complete list of certifications by salary, see page 49.

U.S. VARIATIONS

For IT staff in the continental U.S., the average salary ranges from a high of $90,938 in the Pacific region to a low of $70,097 in the East South Central region. Variations exist between regions as well as within them.

For example, Cisco-certified professionals in South Atlantic region cities such as Raleigh, North Carolina; Atlanta, Georgia; and Richmond, Virginia, average more than $80,500, while their East South Central counterparts in Louisville, Kentucky; Memphis, Tennessee; and Birmingham, Alabama, earn an average of $66,165. Certified project managers in cities such as Chicago, Illinois; Indianapolis, Indiana; and Cincinnati, Ohio, average in excess of $104,600, compared to an average of $87,151 in Oklahoma City, Oklahoma; Little Rock, Arkansas; or Baton Rouge, Louisiana.

Top 5 States by Salary	Mean	Median
District of Columbia	$125,746	$132,000
Connecticut	$113,326	$106,150
Virginia	$110,663	$104,750
California	$105,680	$100,000
Maryland	$103,702	$96,000

Bottom 5 States by Salary	Mean	Median
Alaska	$76,353	$76,500
Nevada	$75,085	$75,000
Montana	$72,329	$70,000
South Dakota	$71,777	$69,500
Wyoming	$65,875	$71,750
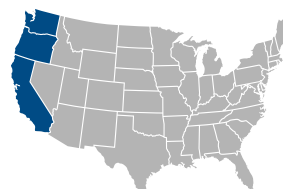
1. PACIFIC
MEAN: $102,775
MEDIAN: $95,200

2. MID-ATLANTIC
MEAN: $99,950
MEDIAN: $94,025
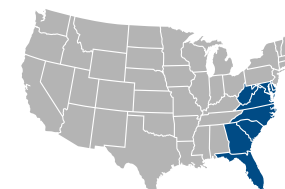
3. SOUTH ATLANTIC
MEAN: $97,713
MEDIAN: $91,738
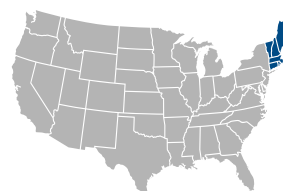
4. NEW ENGLAND
MEAN: $94,778
MEDIAN: $92,000
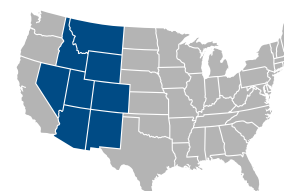
5. MOUNTAIN
MEAN: $90,064
MEDIAN: $85,455
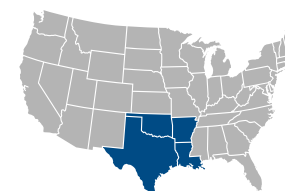
6. WEST SOUTH CENTRAL
MEAN: $89,775
MEDIAN: $86,450
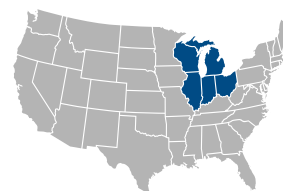
7. EAST NORTH CENTRAL
MEAN: $89,107
MEDIAN: $85,000
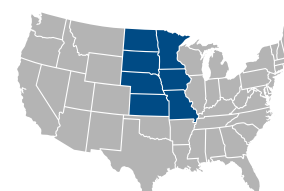
8. WEST NORTH CENTRAL
MEAN: $86,036
MEDIAN: $83,000
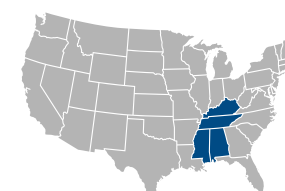
9. EAST SOUTH CENTRAL
MEAN: $82,555
MEDIAN: $79,220

10. PUERTO RICO & OTHER TERRITORIES
MEAN: $75,814   MEDIAN: $67,288

NOTE: For a complete list of certifications by salary, see page 49.

CANADIAN VARIATIONS

Regional variations in salary also exist between the provinces and key markets in Canada. Overall, IT professionals in Canada earn an average of $71,633, with IT decision-makers averaging $90,410 and staff averaging $64,428. Provincial variations range from $61,380 in Nova Scotia to $76,328 in Alberta.

Project Management Professional (PMP®)-certified respondents show a peak salary of $79,204 in Alberta compared to the Canadian average of $70,076. Security-certified professionals' salaries in Alberta average $85,957 compared to the national average of $72,586.
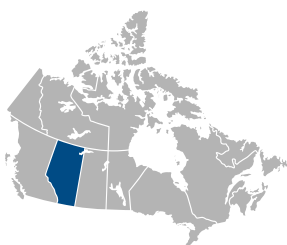
1. ALBERTA
MEAN: $76,328
MEDIAN: $72,000

2. ONTARIO
MEAN: $73,153
MEDIAN: $67,171

3. QUEBEC
MEAN: $71,531
MEDIAN: $65,000

4. OTHERS
MEAN: $70,522
MEDIAN: $61,238
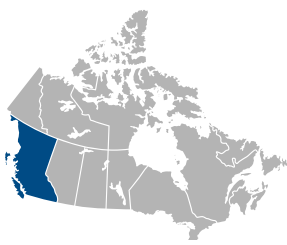
5. BRITISH COLUMBIA
MEAN: $69,935
MEDIAN: $65,000

6. MANITOBA
MEAN: $65,182
MEDIAN: $63,385

7. SASKATCHEWAN
MEAN: $63,437
MEDIAN: $60,000

8. NOVA SCOTIA
MEAN: $61,380
MEDIAN: $55,738

NOTE: For a complete list of certifications by salary, see page 49.

JOB SATISFACTION

FORTY-TWO PERCENT OF THOSE WHO TRAINED IN THE LAST YEAR

SAID THEY'RE FULLY SATISFIED WITH THEIR CURRENT POSITION.

Eighty-five percent of respondents worldwide said they are either satisfied (40 percent) or somewhat satisfied (45 percent) in their position. Those who are not satisfied ranged from 13 percent in the U.S. and Canada to 19 percent in Asia-Pacific.

The satisfaction gap between IT decision-makers and staff is significant in all regions. Respondents in Latin America reported the largest gap with 49 percent of IT decision-makers being satisfied, compared to 36 percent of their staff. Gaps in EMEA and Asia-Pacific are similar.

The association between job satisfaction and likelihood to pursue a new position is strong. Seventy-one percent of those who are not satisfied are pursuing another position. Similarly, respondents who feel less secure in their current position are more than twice as likely to report plans to pursue new employment (51 percent versus 23 percent for those who feel secure).

Globally, male IT workers are more likely than their female counterparts to indicate a desire to change employers (31 percent versus 23 percent). Also, junior employees—that is, those in entry-level roles with one to five years of tenure—are the most likely to report a desire to change employers (40 percent versus the norm of 30 percent).

Professionals in certain industries reported a higher or lower likelihood to change employers:

MORE LIKELY TO CHANGE

- Telecommunications
- Hospitality
- Media
- IT Communications Manufacturing

LESS LIKELY TO CHANGE

- Aerospace
- Legal
- Transportation
- Healthcare

Data indicates that training is positively associated with one's sense of job security and job satisfaction. Forty-two percent of those who trained reported feeling fully satisfied with their current position, compared to 32 percent of those who did not train. Also, 22 percent of those who trained reported feeling more secure in their role compared to 13 percent of those who did not train.

GLOBAL IT JOB SATISFACTION

Satisfied ■ Somewhat Satisfied ■ Not Satisfied

United States
- 46% Satisfied
- 41% Somewhat Satisfied
- 13% Not Satisfied

Canada
- 40% Satisfied
- 48% Somewhat Satisfied
- 12% Not Satisfied

Latin America
- 40% Satisfied
- 43% Somewhat Satisfied
- 17% Not Satisfied

EMEA
- 37% Satisfied
- 46% Somewhat Satisfied
- 17% Not Satisfied

Asia-Pacific
- 33% Satisfied
- 48% Somewhat Satisfied
- 19% Not Satisfied

GLOBAL SATISFACTION VS. LIKELIHOOD TO PURSUE A NEW POSITION

■ Not Likely to Pursue a New Position   ■ Somewhat Likely to Pursue a New Position   ■ Very Likely to Pursue a New Position

Satisfied
- 59% Not Likely
- 29% Somewhat Likely
- 13% Very Likely

Somewhat Satisfied
- 20% Not Likely
- 48% Somewhat Likely
- 32% Very Likely

Not Satisfied
- 5% Not Likely
- 25% Somewhat Likely
- 71% Very Likely
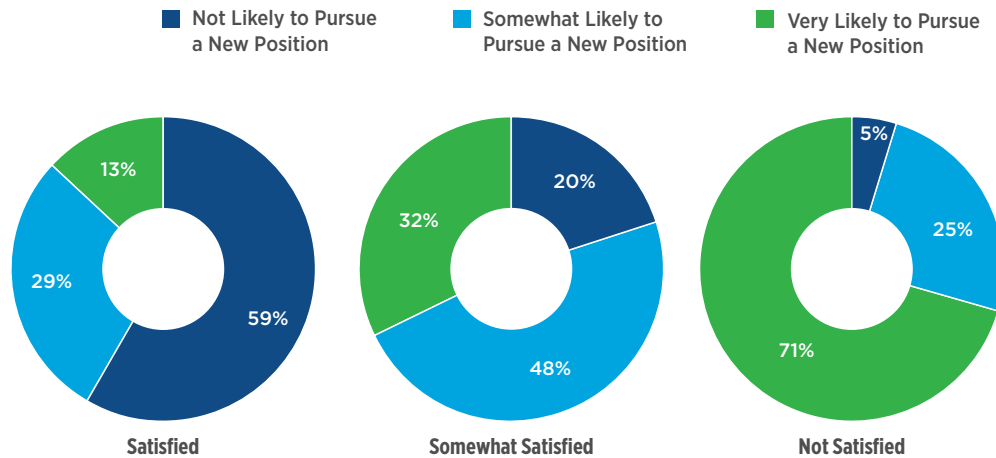
> " I will be looking for a new position this year as I do every task in my current position easily without a mistake. It is time for a change to an opportunity where I will feel all my knowledge and experience is fully used and appreciated for my success.
>
> **– SURVEY RESPONDENT**

PROFESSIONAL DEVELOPMENT

CERTIFIED IT PROFESSIONALS IN THE ASIA-PACIFIC REGION MAKE AS MUCH AS 15.3 PERCENT MORE THAN THEIR NONCERTIFIED PEERS.

Professional development takes on many appearances and includes everything from reading a blog post or downloading a white paper to attending a multiday certification prep course or technical conference.

Respondents told us about these and other methods they use to keep current, the importance of professional development in their present career stage, and the professional development activities they plan to pursue this year.

> " The key issues we are facing include shifting technologies toward cloud-based solutions and finding/maintaining the skills needed in order to do so at an acceptable price.
>
> **– SURVEY RESPONDENT**

INFORMATIONAL AND TRAINING METHODS USED BY REGION

Informational Method	U.S. & Canada	Latin America	EMEA	Asia-Pacific	Total
Research a topic online	80%	62%	69%	58%	72%
Attend webinars	68%	58%	59%	51%	62%
Attend a seminar, luncheon or technical conference	63%	52%	58%	54%	59%
Download a white paper	55%	49%	57%	43%	53%
Read and/or contribute to a blog	44%	31%	41%	37%	42%
Use a mobile device to download applications or view content	43%	35%	39%	35%	40%
Join an online community	33%	33%	36%	33%	34%
Post to or follow someone on Twitter or LinkedIn	28%	22%	26%	21%	26%

Training Method	U.S. & Canada	Latin America	EMEA	Asia-Pacific	Total
Self-paced e-learning session	60%	57%	62%	60%	61%
Informal learning session at work	44%	41%	39%	38%	42%
Classroom training session	39%	36%	39%	37%	38%
Formal training session at work	37%	37%	35%	37%	37%
Live instructor-led online training session	38%	33%	26%	24%	32%
Subscription-based course	25%	24%	21%	20%	23%
DVD-based training tool	6%	6%	8%	7%	6%

HOW TECH PROFESSIONALS STAY UP TO DATE

Staying in step with technology involves a mix of informal and formal learning. This mix varies across regions and between IT roles.

Researching topics online is the go-to method for more than 70 percent of respondents. As technical professionals move beyond entry level, their learning tools expand to attending webinars and seminars, reading white papers, and following or contributing to a blog.

When respondents need a deeper dive into a subject, they attend a self-paced online course. Sixty percent of technical professionals and decision-makers said they did so in the last year, and 32 percent of respondents said this is their preferred learning method.

Approximately 41 percent of respondents reported participating in informal learning sessions at work. This method involves technical employees sharing content development and the learning experience and could be as simple as one professional sharing knowledge from a formal course with a co-worker.

Traditional instructor-led classroom training is still considered valuable though it's used less frequently than it was earlier in the decade. In 2016, 37 percent of respondents attended classroom training, and 22 percent labeled it their preferred learning method. Respondents also attended formal onsite training (35 percent) and live, instructor-led online training (32 percent), and one out of four used subscription-based training.

METHODS FOR KEEPING SKILLS CURRENT

Informational Methods Used	IT Decision-Maker	IT Staff	Total
Research a topic online	74%	72%	73%
Attend webinars	68%	59%	62%
Attend a seminar, luncheon or technical conference	67%	55%	59%
Download a white paper	63%	50%	54%
Read and/or contribute to a blog	48%	41%	43%
Use a mobile device to download applications or view content	43%	39%	41%
Join an online community	38%	33%	35%
Post to or follow someone on Twitter or LinkedIn	29%	25%	26%

Training Methods Used	IT Decision-Maker	IT Staff	Total
Self-paced e-learning session	64%	60%	61%
Informal learning session at work	41%	41%	41%
Classroom training session	39%	37%	37%
Formal training session at work	33%	35%	35%
Live instructor-led online training session	34%	31%	32%
Subscription-based course	27%	23%	24%
DVD-based training tool	7%	6%	7%
Other methods	5%	5%	5%
None	5%	6%	5%

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INTERNAL VERSUS EXTERNAL TRAINING RESOURCES

Organizations tap both internal and external resources to fulfill employee training needs. Internal resources include using company employees, such as human resources or learning and development staff, to train other employees; using internally developed and managed training materials; and purchasing and managing internally third-party dedicated software or printed materials. External resources include online third-party training software; trainers brought on-site; and outside training sessions, conferences and events that employees attend.

More than 77 percent of respondents reported using some form of external training compared to 64 percent using internal resources. Those numbers have changed since last year when respondents using external resources reached 85 percent, and those using internal resources was 59 percent. Given that organizations can use external, internal or a combination of the two, it is not surprising to see 41 percent of respondents using both. Regional variations exist with respondents in Latin America relying more on internal training resources than those in the U.S. and Canada or EMEA.

TRAINING SOURCES

U.S. & Canada
18% No Training Provided
30% External Only
17% Internal Only
36% External & Internal

Latin America
18% No Training Provided
28% External Only
25% Internal Only
29% External & Internal

EMEA
21% No Training Provided
31% External Only
17% Internal Only
32% External & Internal

Asia-Pacific
18% No Training Provided
26% External Only
24% Internal Only
32% External & Internal
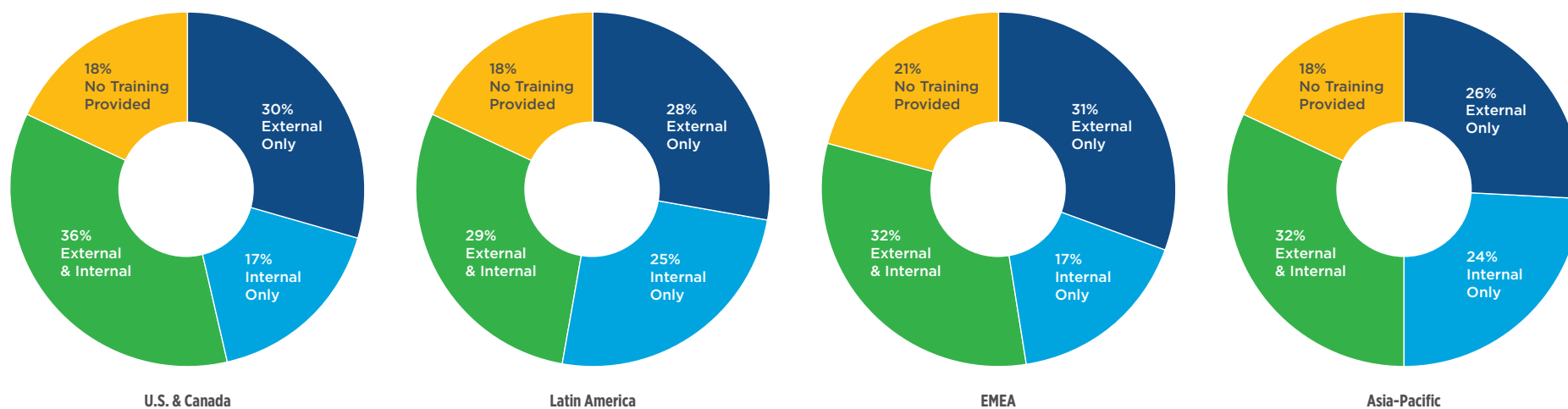
WHY PROFESSIONALS TRAIN

Globally, 84 percent of respondents took some form of training during 2016. This is down slightly from 87 percent in 2015 and up from 78 percent in 2014.

Seventy-five percent of respondents said they train to deepen their existing skills and to gain exposure to new topics, tools and technologies. While this is true across technology roles, it's most common for those early in their career (80 percent) and then declines substantially for those in executive roles (63 percent).

Nearly half (47 percent) of respondents said they train to prepare for a certification exam—consistent with prior year data. Certification training is more common for IT staff (55 percent) and skews down for IT executives (42 percent). Developers and business analysts are less concerned with certification training than other tech professionals in roles such as help desk, cybersecurity, systems and networking.

Other reasons respondents participated in training include preparing for a new product deployment (more so for executives and those in senior-level roles), preparing for a new position (more so for IT staff than decision-makers), and learning how to solve a particular problem.

> "
>
> *We are training to build a foundation for information security and privacy to protect all stakeholders and the organization.*
>
> **– SURVEY RESPONDENT**

REASONS FOR TRAINING

	IT Decision-Maker	IT Staff	Total
Build new skills	67%	79%	75%
Prepare for a career certification or specialist exam	42%	50%	47%
Prepare to qualify for a different job	21%	33%	29%
Prepare organization for a new product deployment or software upgrade	28%	25%	26%
Work with cutting-edge technology	29%	25%	26%
Meet employer's requirement	20%	24%	22%
Solve a particular problem	23%	20%	21%
Evaluate new products for possible purchase	20%	13%	16%
Other	3%	3%	3%

WHY PROFESSIONALS DON'T TRAIN

Not all of this year's respondents reported participating in training. Lack of available training budget is the primary reason. Over one-third (39 percent) of those who did not train said their organizations did not allocate funds for it. According to the IT decision-makers who responded, lack of training budget is also one of the driving reasons behind skills gaps in IT departments. That percentage is consistent across all employee groups regardless of region, industry and company size.

Other reasons include work demands preventing time away from the office, lack of perceived benefit by management and an inability to travel for training purposes.

WHO IS MOST LIKELY TO TRAIN—AND ON WHAT?

Where company-funded training is available, 66 percent of respondents plan to pursue technical skills-based or certification training in the coming year. That rate drops to 44 percent for those who do not have company-funded training.

Respondents are more likely to take skills-based training over certification, project management, process improvement or leadership training. Respondents whose job functions are in cloud computing, networking and data management are especially interested in technical skills-based training in the coming year. Respondents with job functions that have strong industry support for certifications, such as help desk, telecommunications and networking, are most interested in certification-focused training. Those involved in project management or business operations roles are most likely to pursue process improvement, leadership and project management training.

TRAINING LIKELIHOOD BY JOB FUNCTION

Job Function	IT Skills-Based	Certification	Project Management	Process Improvement	Leadership
Application Development / Programming	58%	45%	19%	15%	28%
Business Analysis	52%	46%	27%	34%	43%
Business Operations	44%	39%	35%	33%	55%
Cloud Computing	68%	38%	25%	18%	36%
Cybersecurity	61%	61%	22%	28%	42%
Data Management / Analytics / Business Intelligence	64%	49%	26%	26%	35%
Help Desk / Support / Service Management	63%	62%	24%	27%	34%
Networking / Infrastructure	67%	66%	25%	24%	36%
Project / Program Management	52%	50%	52%	34%	38%
Systems / Enterprise / Architecture	61%	59%	17%	17%	29%
Telecommunications	64%	65%	27%	25%	39%
Total (Excludes "Other" Job Functions)	61%	58%	24%	24%	37%

DO CERTIFICATIONS STILL MATTER?

The IT industry continues to invest heavily in the concept of certification as a means of validating an employee's skill set and capabilities. From both the employer and employee perspectives, achieving a certification is a time-consuming and potentially costly endeavor. Even so, the IT decision-makers responding to this year's study clearly see the benefits of having certified team members, and the recently certified IT staff respondents noted direct benefits of certification, including performing work faster (44 percent), having sought-after expertise within their organization (39 percent), implementing system efficiencies (33 percent), and deploying products and services more efficiently (23 percent).

Certification pays off financially as well. In the U.S. and Canada, the difference between salaries of certified and noncertified IT staff is nearly $8,400, or 11.7 percent. The difference for IT decision-makers is $9,201, or 8.9 percent. Although the base salaries are lower in other global regions, the trend is the same. A Latin American IT staff member possessing a valid certification earns on average $24,751, or 10.3 percent, more than his or her non-certified counterpart who earns $22,430. In EMEA, certified IT decision-makers earn an average of 13

percent more than their noncertified counterparts ($63,557 versus $56,262). The combined average salary for certified IT professionals in Asia-Pacific is 15.3 percent higher than for noncertified ($44,118 versus $38,254).

Drilling down into the data may show greater or smaller differences than these norms depending on factors such as tenure, type of certification, job role and country. However, the trend is clear: it pays off economically for IT professionals to pursue a career-relevant certification.

WHO GETS CERTIFIED?

Globally, 86 percent of IT employees possess at least one valid certification. This skews down to 82 percent for the U.S. and Canada and up to 90 percent for EMEA, Latin America and Asia-Pacific. Respondents around the globe hold an average of three certifications. Respondents in EMEA hold the most at 3.5, and those in the U.S. and Canada average the fewest at 2.9. Half of the respondents earned their most recent certification within a year before the survey. Three out of four earned their most recent certification within two years before.

With additional certifications frequently required for someone to advance into new job roles, it is not uncommon to see IT employees planning their next certification, often years ahead. Overall, two-thirds

of respondents reported either being presently engaged in training for a certification or possessing plans to do so within the year. This is up from 59 percent last year.

Those who are currently certified are more likely to be actively engaged in pursuing new certifications. Seventy percent of those who possess a certification are engaged in certification-focused training presently or have plans to do so in the coming year. This compares to 48 percent for those yet to earn their first certification. In short, fewer than half of those who are not currently certified have taken steps to change this status, even though there is a potential economic benefit to doing so.

CERTIFIED PROFESSIONALS BY REGION

Certified   Noncertified

U.S. & Canada	Latin America	EMEA	Asia-Pacific	Total
18% / 82%	10% / 90%	9% / 91%	10% / 90%	14% / 86%
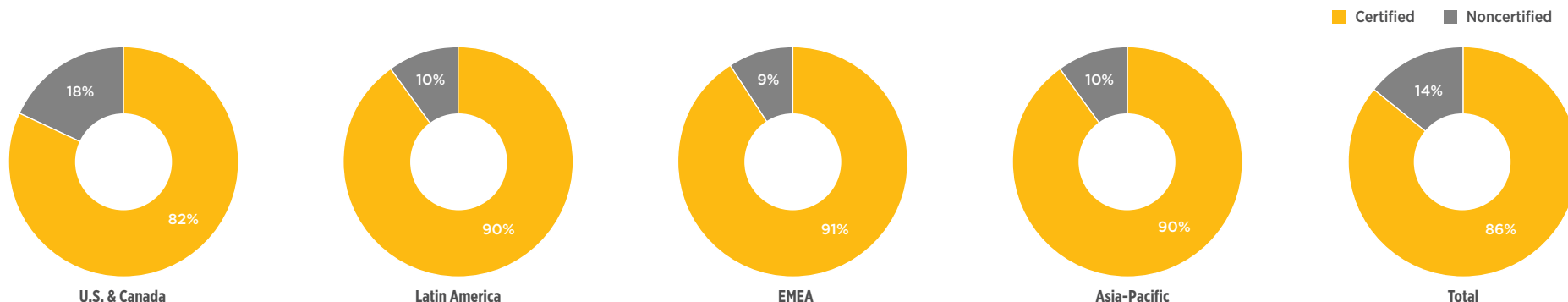
WHAT THEY'RE CERTIFIED IN

Thirty-six percent (3,917) of this year's certified respondents hold a Microsoft certification—more than any other type of certification. Certifications range from entry-level to the most advanced and cover numerous functional areas including:

- Application development (e.g., MCSD: Web Applications)
- Database (e.g., MCSA: SQL 2016 Database Administrator)
- Cloud-related (e.g., Microsoft Specialist: Implementing Microsoft Azure Infrastructure Solutions)
- Help desk (e.g., MCSA: Windows 10)
- Networking (MTA: Networking Fundamentals)
- Operating systems and servers (MCSA: Windows Server 2016, MCSE: Server Infrastructure)
- Linux (MCSA: Linux on Azure)
- Cybersecurity (MTA: Security Fundamentals)
- Virtualization (MCSE: Private Cloud)

The global average salary for respondents holding at least one Microsoft certification is $66,436, with a median of $62,500. By comparison, the U.S. average is $91,428, with a median of $86,682. Since certifications appeal to a wide range of abilities, it is typical to see a similar spread in salaries. For example, the global average for someone holding an MCSA: Windows Server 2012 is $60,385—that's 9.1 percent below the global average for all Microsoft certifications. The MCSE: Server Infrastructure garners an average salary of $73,107, which is 10 percent above the global norm.

Microsoft is not the only certification category to capture a significant share of responses. IT professionals with an active Cisco certification account for 31 percent of the certified respondents, and one certified respondent out of four (26 percent) holds some form of cybersecurity or privacy certification. CompTIA and ITIL®/ITSM round out the top five certification categories with 22 percent and 21 percent, respectively.

WHERE THE BIG MONEY IS

Average global salaries are highest in:

- Governance: $92,766 (median of $86,345)
- Business process: $88,191 (median of $80,000)
- Cybersecurity and privacy: $86,145 (median of $82,000)
- Project management: $84,807 (median of $78,567)
- Business architecture: $82,608 (median of $78,941)

While certified respondents in the U.S. and Canada reported the highest average salaries ($90,512, with a median of $83,960), the highest paid categories show considerable variation across regions. For example, in the U.S., certifications in business architecture bring in the highest salary, averaging $125,950 with a median of $133,212. Certifications in AWS follow closely with an average of $122,792 and median of $120,000. In a region such as Australia, respondents certified in cloud technologies, governance, project management, and cybersecurity and privacy have the highest salaries.

In regions where salaries are substantially lower on average, such as in India, certain certification categories still stand out. Certified project managers earn an average of $28,442 (median of $29,000) compared to an overall average of $17,760 (median of $13,370), representing a 61 percent increase over the national average.

In other key markets, such as Japan, salaries are as high—or nearly so—as in the U.S. and Canada. The highest-paying certifications are in governance (average of $131,929 with a median of $126,000) and cybersecurity (average of $104,839 with a median of $100,000).

Germany, the United Kingdom and Ireland tend to rank in that order for average total IT salary as well as for average salaries within specific categories. The typ-

AVERAGE SALARY BY CERTIFICATION CATEGORY

Certification Category	U.S. & Canada			Latin America			EMEA			Asia-Pacific			Total		
	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
AWS	$113,932	$110,000	400	$58,425	$36,400	17	$61,841	$59,008	234	$55,045	$40,000	254	$82,893	$78,000	905
Application Development and Programming	$99,741	$90,000	257	$38,010	$26,795	20	$52,470	$49,133	130	$50,194	$40,000	73	$76,831	$72,000	480
Avaya	$80,344	$75,000	84	$35,070	$18,868	12	$30,599	$24,923	28	$22,633	$12,010	18	$59,394	$51,459	142
Business Architecture	$96,552	$83,000	85	$53,131	$46,000	8	$73,993	$75,600	86	$76,653	$85,000	35	$82,608	$78,941	214
Business Analysis	$87,360	$76,250	226	$38,206	$29,665	11	$71,786	$63,819	58	$70,364	$37,000	29	$81,382	$73,100	324
Business Process	$102,983	$98,750	210	$43,035	$37,900	13	$67,767	$60,469	74	$67,191	$45,000	48	$88,191	$80,000	345
Cisco	$81,943	$75,135	1,190	$26,034	$19,750	353	$36,263	$28,000	1,078	$26,738	$13,625	760	$49,132	$40,000	3,381
Citrix	$96,194	$90,000	475	$28,080	$25,000	88	$59,069	$55,000	477	$44,058	$26,000	291	$66,987	$64,558	1,331
Cloud Computing (Other)	$101,731	$96,900	216	$40,982	$27,500	27	$59,572	$60,000	125	$69,828	$40,000	98	$80,193	$72,638	466
CompTIA	$82,045	$75,970	1,673	$27,761	$21,676	88	$46,948	$41,000	445	$50,679	$38,750	174	$71,183	$66,986	2,380
Cybersecurity and Privacy	$103,234	$98,000	1,596	$41,956	$37,900	125	$65,945	$62,473	722	$68,497	$55,500	406	$86,145	$82,000	2,849
Database	$88,099	$81,250	344	$32,484	$22,946	42	$48,274	$46,727	198	$49,849	$36,616	111	$67,283	$62,000	695
Data Center	$92,094	$87,885	867	$33,178	$25,750	94	$52,244	$48,000	726	$46,881	$24,150	376	$67,145	$63,000	2,063
EMC	$100,465	$90,975	62	$37,371	$38,000	19	$49,769	$38,750	50	$54,497	$24,000	41	$67,800	$54,500	172
Governance	$115,521	$115,000	198	$47,770	$39,000	50	$78,313	$72,550	165	$94,248	$75,000	87	$92,766	$86,345	500
Help Desk	$77,951	$71,000	517	$30,241	$24,655	33	$45,581	$40,000	279	$43,798	$36,014	102	$62,818	$60,000	931
HP	$88,278	$80,040	146	$24,419	$21,150	32	$46,101	$41,947	114	$54,728	$23,100	67	$62,931	$55,000	359
IBM	$93,854	$89,500	146	$37,068	$28,925	18	$44,657	$40,573	82	$57,094	$22,528	61	$70,080	$60,000	307
Internet / Web Development	$88,999	$80,000	213	$56,213	$36,998	8	$52,338	$50,000	67	$50,711	$36,250	34	$76,514	$70,000	322
ITIL and IT Service Management	$93,601	$87,500	989	$34,327	$28,750	137	$57,635	$52,450	717	$55,929	$40,000	465	$71,319	$66,123	2,308
Juniper	$90,238	$86,000	83	$36,529	$32,893	30	$39,416	$32,970	74	$36,972	$13,333	64	$55,253	$44,000	251
Knowledge Management	$92,202	$90,500	24	$42,459	$47,750	4	$61,443	$44,000	13	$62,305	$50,000	6	$75,644	$74,000	47
Microsoft	$86,086	$80,000	1,904	$31,220	$24,655	185	$50,469	$46,634	1,212	$47,691	$30,000	616	$66,436	$62,500	3,917
Networking (Other)	$86,704	$84,230	186	$31,473	$22,950	21	$45,882	$33,600	129	$48,204	$20,500	75	$64,044	$57,000	411
Novell	$88,521	$84,000	166	$28,209	$22,734	9	$59,712	$58,000	48	$74,320	$62,000	25	$79,325	$74,725	248
Project Management	$99,430	$94,000	673	$37,693	$32,936	39	$65,235	$62,445	293	$71,052	$54,000	165	$84,807	$78,567	1,170
Red Hat / Linux	$89,527	$80,000	254	$30,077	$23,000	37	$47,987	$45,000	225	$35,379	$21,490	128	$60,836	$54,500	644
SAP	$98,857	$80,000	62	$63,172	$27,950	9	$63,673	$52,947	31	$54,921	$46,500	25	$79,091	$70,000	127
Sun	$111,561	$118,500	50	$46,532	$12,000	3	$57,857	$60,000	22	$55,387	$30,500	34	$81,410	$80,000	109
VMware	$92,025	$85,140	442	$33,148	$24,375	76	$54,476	$50,250	344	$42,459	$29,230	223	$65,809	$62,838	1,085
Virtualization (Other)	$99,221	$93,000	105	$26,252	$23,200	22	$54,714	$46,359	116	$39,263	$25,000	49	$65,981	$56,500	292
Wireless	$88,910	$79,500	90	$29,063	$26,125	16	$43,537	$39,915	56	$60,734	$40,000	40	$66,012	$57,596	202
Other Certifications	$88,875	$85,000	445	$27,695	$20,000	58	$52,322	$47,300	237	$49,625	$31,250	120	$69,199	$65,065	860
Total	$90,512	$83,960	5,302	$30,541	$24,137	665	$51,230	$45,550	2,984	$44,118	$25,000	1,861	$67,997	$64,000	10,812

ical IT professional in Germany earns on average $79,651 (median of $74,500), compared to $66,026 (median of $62,000) in the United Kingdom and $65,609 (median of $62,500) in Ireland. In Germany, salaries are highest for certifications in governance (average of $119,868 and median of $118,278) and cybersecurity and privacy (average of $96,865 and median of $88,713). In the United Kingdom, salaries are highest for certifications in business architecture (average of $104,054 and median of $100,200) and in cybersecurity and privacy (aver-

age of $77,792 and median of $73,750). In Ireland, salaries are highest in cybersecurity and virtualization with averages of $70,768 and $75,967, respectively.

Respondents said certifications have a positive impact on their earning potential—some more positive than others, as evidenced by this year's Top 20 Highest-Paying Certifications list. To be included in the list, a certification must have had at least 150 responses from the U.S. and Canada.

HIGHEST-PAYING CERTIFICATIONS

Certification	U.S. & Canada			Latin America			EMEA			Asia-Pacific			Total		
	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Certified in Risk Systems and Control (CRISC)	$127,507	$122,900	159	$61,730	$46,651	10	$82,959	$82,000	65	$79,546	$68,000	33	$108,271	$109,000	267
Certified Information Security Manager (CISM)	$122,448	$120,000	276	$49,453	$41,850	33	$71,534	$68,500	252	$86,285	$70,000	124	$93,655	$90,025	685
AWS Certified Solutions Architect – Associate	$119,085	$118,350	304	$58,425	$36,400	17	$62,169	$60,000	202	$57,346	$39,618	202	$84,603	$80,000	725
Certified Information Systems Security Professional (CISSP)	$118,179	$115,000	304	$43,428	$47,000	9	$77,208	$74,500	116	$94,334	$85,110	69	$103,981	$100,000	498
Certified Information Systems Auditor (CISA)	$110,634	$106,059	588	$45,886	$38,000	71	$66,897	$64,750	416	$73,071	$62,750	262	$86,226	$83,000	1337
PMP®: Project Management Professional	$105,324	$100,000	293	$46,783	$39,500	18	$53,521	$52,000	50	$77,217	$59,700	73	$92,200	$84,344	434
Citrix Certified Professional – Virtualization (CCP-V)	$102,353	$97,000	153	$31,213	$31,700	30	$65,850	$61,875	182	$50,091	$29,230	83	$73,077	$70,000	448
Citrix Certified Associate – Networking (CCA-N)	$98,583	$92,000	163	$30,691	$25,750	28	$58,080	$52,850	128	$58,062	$41,834	56	$73,637	$69,000	375
VMware Certified Professional 5 – Data Center Virtualization (VCP5-DCV)	$96,309	$90,000	159	$42,180	$36,000	15	$57,332	$53,300	139	$48,938	$37,475	83	$70,649	$68,000	396
Citrix Certified Associate – Virtualization (CCA-V)	$96,231	$92,000	241	$30,193	$30,000	41	$58,190	$55,000	244	$41,602	$24,300	158	$66,084	$62,975	684
MCSE: Server Infrastructure	$94,921	$92,000	329	$30,927	$24,328	28	$54,305	$50,775	250	$61,939	$35,500	116	$73,107	$70,000	723
ITIL® v3 Foundation	$93,638	$88,000	891	$34,187	$28,160	132	$56,601	$52,000	664	$55,945	$40,000	434	$70,630	$65,800	2121
CompTIA Project+	$92,593	$88,000	205	$33,821	$43,000	3	$48,275	$50,000	27	$67,063	$55,500	16	$85,496	$81,555	251
CCNP Routing and Switching	$90,945	$89,550	193	$30,968	$24,578	70	$37,114	$28,500	275	$26,422	$14,962	193	$47,915	$35,000	731
MCSA: SQL Server	$90,303	$83,750	188	$32,103	$23,157	27	$48,632	$45,000	125	$48,553	$30,000	57	$67,230	$60,000	397
MCSA: Windows Server	$89,941	$84,000	628	$31,505	$24,828	70	$50,042	$45,500	591	$41,031	$21,231	290	$63,434	$60,000	1579
CompTIA Security+	$87,666	$83,000	678	$32,314	$23,750	18	$53,490	$46,944	101	$60,210	$53,500	35	$81,165	$78,000	832
CCNA Security	$84,652	$80,000	185	$29,210	$24,000	41	$38,193	$28,440	164	$29,783	$16,057	79	$54,317	$48,000	469
CCNA Routing and Switching	$80,873	$75,000	799	$24,463	$18,197	270	$32,873	$25,000	825	$22,700	$12,000	612	$44,787	$34,000	2506
CompTIA Network+	$79,435	$75,000	760	$29,280	$24,775	27	$44,747	$38,498	140	$41,370	$27,000	28	$71,816	$68,000	955

CYBERSECURITY

As in the last three years of this survey, certifications in cybersecurity hold the top spots for salary. In fact, this year, six of the top 20 are cybersecurity certifications and four of those are in the top five: ISACA's CRISC, CISM, and CISA, along with CISSP from (ISC)[2].

The top cybersecurity certification salaries range from an average of $110,634 (median of $106,059) for CISA certification to $127,507 (median of $122,900) for CRISC certification. The two other cybersecurity certifications in the top 20 are CompTIA Security+ with an average of $87,666 (median of $83,000) and CCNA Security with an average of $84,652 (median of $80,000).

Cybersecurity certifications maintain average salaries significantly above the norm. In the U.S. and Canada, the average salary for all certified respondents is $90,512 (median of $83,960), while the average for noncertified is $79,854 (median of $75,000). By contrast, the average salary for security-certified employees is $103,234 (median of $98,000). This salary lift is true in Latin America, EMEA and the Asia-Pacific region.

CLOUD COMPUTING

Cloud certifications, including AWS Certified Solutions Architect – Associate and others from AWS, also have average salaries significantly above the norm. In the U.S. and Canada, the average salary for AWS-certified IT staff is 27.5 percent higher than the norm ($101,755 versus $79,796). A positive gap of 13.7 percent occurs for IT decision-makers who are AWS-certified ($127,942 versus $112,525). The gap for AWS certifications outside the U.S. and Canada is positive as well with gains of 17.2 percent for IT decision-makers who are AWS-certified and 25.5 percent for staff.

The increased salary for cloud-certified professionals is not limited to those with AWS certifications. Those holding other cloud certifications, such as CompTIA Cloud Essentials+ (CEP), CompTIA Cloud+, and Architecting Microsoft Azure Solutions, show significant salary gains over their non-cloud-certified counterparts. In the U.S. and Canada, the average salary for someone holding CompTIA CEP certification is $105,498 (median of $94,000), and the salary for someone certified in Architecting Microsoft Azure Solutions exceeds $95,000 (median of $101,000).

PROJECT MANAGEMENT

Certified project managers in the U.S. and Canada also have average salaries above the norm. This is especially true for those possessing a current PMP® certification. The average global salary is $92,200 (median of $84,344), ranging from $46,783 (median of $39,500) in Latin America to $105,324 (median of $100,000) in the U.S. and Canada. Other key certifications in this category include CompTIA Project+ (average of $92,593 and median of $88,000 in the U.S. and Canada) and Certified Scrum Master (average of $107,258 and median of $109,700 in the U.S. and Canada).

VIRTUALIZATION

There is no lack of virtualization-related certifications present in the top 20. Respondents in the U.S. and Canada who have earned VMware Certified Professional 5 – Data Center Virtualization (VCP5-DCV) earn an average salary of $96,309 (median of $90,000). In the U.S. and Canada, salaries for VMware certifications average over $92,000 (median of $85,140), with several VMware Certified Professional and VMware Certified Advanced Professional certifications exceeding $115,000.

CISCO

Cisco has three certifications in the top 20: CCNA Routing and Switching, CCNA Security, and CCNP Routing and Switching. Average salaries for these certifications in the U.S. and Canada range between $80,873 and $90,945. Cisco's wide array of certifications appeals to all levels of responsibility making for a low overall average salary (U.S. and Canadian average of $81,943 and a median of $75,135). In the U.S., several Cisco certifications have average salaries exceeding $95,000. Average U.S. salaries for CCIE Routing and Switching, CCNP Security, and CCNP Collaboration exceed $106,000.

CITRIX

For Citrix, the average in the U.S. and Canada exceeds $96,100 (median of $90,000) with their expert-level certifications exceeding $105,000. Citrix has two virtualization certifications in the top 20 and a third for networking. The virtualization certifications command salaries ranging from $96,231 (median of $92,000) for Citrix Certified Associate – Virtualization (CCA-V) up to $102,353 (median of $97,000) for Citrix Certified Professional – Virtualization (CCP-V).

MICROSOFT

Microsoft's MCSE for Private Cloud also commands a salary above the norm for certified professionals (average of $99,729 and a median of $92,000). Nearly 4,000 respondents reported having at least one Microsoft certification. Because Microsoft's certification portfolio covers many categories and responsibility levels, the average salary of $86,086 (median of $80,000) is below the overall norm of $90,512. Even so, the company has three certifications in the top 20 list: MCSE: Server Infrastructure, MCSA: Windows Server 2008 and MCSA: Windows Server 2012. Average U.S. and Canadian salaries for the three range between $87,556 and $94,921. In the U.S., 20 Microsoft certifications have average salaries exceeding $100,000.

ROUNDING OUT THE TOP 20

ITIL v3 Foundation certification and CompTIA Network+ round out the top 20. In the U.S. and Canada, salaries for ITIL v3 Foundation certified professionals average $93,638 (median of $88,000). Globally, those with ITIL v3 Foundation earn average salaries in the mid-range of the top 20 list (global average of $70,630 and median of $65,800). Next to CCNA Routing and Switching, this ITIL certification generated the second largest number of responses at 2,121.

Those in the U.S. and Canada who have earned the entry-level CompTIA Network+ reported an average salary of $79,435 (median of $75,000). That's $1,438 less than Cisco's entry-level CCNA Routing and Switching. Average salaries for CompTIA Network+ in EMEA, Latin America and Asia-Pacific exceed the averages for CCNA Routing and Switching.

OTHER CERTIFICATIONS TO WATCH

A few additional certifications are worth keeping an eye on. Governance certifications COBIT and CGEIT have average salaries from $120,000 to $130,000. Salaries for governance certifications outside of the U.S. and Canada are all significantly above regional norms. For example, the average salary for a COBIT holder in EMEA is $24,133, or 47 percent, more than the overall norm for certified IT employees in that region ($75,363 versus $51,230).

Earning a Six Sigma Green Belt certification can lead to significant salary increases for IT professionals as demonstrated by the 23 percent and 7 percent gains in EMEA and Latin America, respectively. Holders of the business architecture certification TOGAF 9.1 in the Asia-Pacific region outpace their other certified counterparts by a substantial margin ($78,776 versus $44,118, which is the average for all certification holders in the region). In the high-paying cyber-security category, numerous certifications exist, such as those offered by GIAC and advanced versions of the CISSP.

NEW & EMERGING CERTIFICATIONS

Looking ahead at new and upcoming certifications brings insight into which areas the industry finds valuable. If you are an early adopter or in a position where you need to show that you have up-to-the-minute expertise of a technology, this alphabetical list of recently released and soon-to-be-released certifications is for you. Certifications in cloud computing, cybersecurity, and analytics and big data are leading the charge. We'll be updating our 2017 new certification list quarterly to add the new certifications relevant to you and the industry.

AVAYA

- Avaya Engagement Solutions Certifications / Avaya Certified Integration Specialist (ACIS)
- Avaya Engagement Solutions Certifications / Avaya Certified Solution Specialist (ACSS)

The Avaya Engagement Solutions Avaya Certified Integration Specialist (ACIS) and the Avaya Engagement Solutions Avaya Certified Solution Specialist (ACSS) credential certifies the professional has achieved a level of proficiency required to integrate and implement core and complex solutions based on reference architectures from Avaya customer scenarios.

Source: Avaya-learning.com

CISCO

- CCNA Cyber Ops

Today's organizations are challenged with rapidly detecting cybersecurity breaches and effectively responding to security incidents. Teams of people in security operations centers (SOCs) keep a vigilant eye on security systems, protecting their organizations by detecting and responding to cybersecurity threats. The CCNA Cyber Ops certification prepares professionals to begin a career working with associate-level cybersecurity analysts within SOCs.

NEW & EMERGING CERTIFICATIONS

CompTIA.

- CompTIA Cybersecurity Analyst (CSA+)

Cybersecurity is a complex orchestration of employees, systems and business processes, and building an educated workforce that can bring all of the pieces together is essential for maximum return on investment. The new CompTIA Cybersecurity Analyst (CSA+) certification is an intermediate-level credential that validates risk analysis and threat detection skills, completing the CompTIA cybersecurity career pathway and bridging the gap between CompTIA Security+ and CompTIA Advanced Security Practitioner (CASP).

EC-Council

- EC-Council Certified Network Defender (CND)

Cyberthreats are increasing in frequency and sophistication, and building a secure organization requires more than implementing the latest technologies. An educated workforce is key to true cybersecurity, and networking professionals play a significant role in defense. The new Certified Network Defender (CND) credential developed by EC-Council, the certification body that created and owns the acclaimed Certified Ethical Hacker certification, enables network administrators and engineers to gain and validate the skills needed to build a secure, resilient network.

Google Cloud

- Google Certified Professional – Cloud Architect

The Google Cloud Architect certification was developed to meet the demand from businesses that are moving to the cloud and seeking to hire or fill existing skills gaps with proficient technical professionals. Achieving this certification demonstrates the ability to design, develop and manage a secure, scalable and reliable cloud architecture that will enable businesses to use Google Cloud Platform (GCP) technologies. Attending hands-on training courses led by experts and gaining real-world experience will be valuable for individuals seeking to fill technology knowledge gaps, learn GCP-recommended practices and earn this certification.

- Google Certified Professional – Data Engineer

In recent years, LinkedIn and Forbes have identified the data engineer as one of the top technical jobs with a strong starting salary and earning potential. Google envisions the data engineer as a key role to help forward-thinking organizations modernize the way they use data and infrastructure to enable efficient decision-making and effective business transformation. The Google Data Engineer certification establishes a trusted standard of proficiency for this role and demonstrates expertise using Google Cloud Platform (GCP) to design, build, maintain and troubleshoot data processing systems with a focus on security, reliability, fault-tolerance, fidelity and efficiency of such systems. Attending hands-on training courses led by experts and gaining real-world experience will be valuable for individuals seeking to fill technology knowledge gaps, learn GCP recommended practices and earn this certification.

IBM

- IBM Certified Solutions Architect – SoftLayer v1
- IBM Solutions Advisor – SoftLayer v1

In 2016, IBM gave notice to its network of partners that it would be revamping its partner program effective 2017. This restructuring ushers in new competency benchmarks across IBM's business units from both a technical and a sales perspective. Partners have been given until mid-2017 to comply with these new benchmarks. As a direct result of this change, we expect an increase in both the relevance and prevalence of IBM certifications in the market.

Cloud is an integral part of IBM's strategy, and through their new partner program, IBM is benchmarking cloud competencies with tests that align directly with the SoftLayer (soon to be IBM Bluemix Infrastructure) certifications and their respective training pathways. The Architect certification represents the technical competency side, whereas the Advisor certification represents that sales side.

- IBM Certified Designer – IBM Cognos Analytics Author V11

IBM Cognos Analytics was released at the end of 2015, but market adoption of the product has been slow. Now that we're a few dot versions out from release and the market has had time to adjust to the radical changes to the GUI and functionality, we expect the adoption to increase and result in higher demand for skills validation surrounding this popular Analytics solution. The changes IBM is making to their partner program will increase the need for competency checks within IBM Analytics as well.

Microsoft

In the fall of 2016, Microsoft streamlined their certifications to better align with technical industry areas of competence. As a result, there are five new expert certifications emphasizing skills validation associated with their products and services.

- MCSE: Cloud Platform and Infrastructure focuses on Windows Server and Microsoft Azure.
- MCSE: Data Management and Analysis spotlights Microsoft data products and services that are both on-premises and cloud-based.
- MCSE: Mobility targets skills in Windows Client and Enterprise Mobility Suite.
- MCSE: Productivity centers on key day-to-day products such as Office 365, SharePoint, Exchange and Skype for Business.
- MCSD: App Builder is intended for those interested in the future of web and mobile app development.

To earn any of these five credentials, the first step is to earn one of the qualifying Microsoft Certified Solutions Associate (MCSA) certifications. The next step is to pass a single exam from the list of associated elective options. Our Microsoft Certification Track illustrates the paths to each new expert-level certification. These new certifications never expire, but you can recertify each year by passing an additional exam from the corresponding list of electives after which a new date will appear on your transcript.

IT DECISION-MAKERS

SIXTY-EIGHT PERCENT OF IT DECISION-MAKERS SAID THEIR TEAMS ARE FACING A SKILLS SHORTAGE.

Guiding the use of resources to meet the information needs of the organization is the task of the IT decision-maker. For their organizations to be successful, they must address challenges such as security, impact of the Internet of Things, skills gaps and the value of training.

In this year's response pool, one out of four respondents (28 percent or 3,953) said they hold some degree of managerial responsibility over IT efforts. This is up three percentage points over the prior year and down from 33 percent in 2015. The size of the IT group these respondents manage has been consistent over the last three iterations of the study. Eighty percent manage teams of fewer than 100, and half manage teams of up to 10 employees.

SIZE OF IT WORKFORCE MANAGED

2015

49%	28%	12%	11%

2016

50%	31%	9%	10%

2017

52%	28%	11%	9%

10 or Fewer   11–99   100–499   500 or More
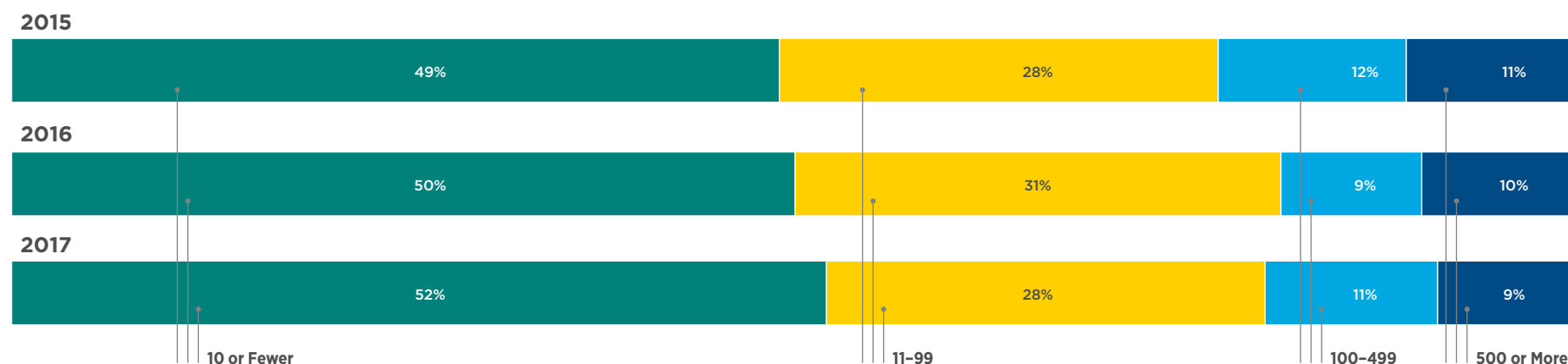
IT DEPARTMENT BUDGETS

Respondents reported budgets that correlate with the size of the teams they manage along with an increasing trend toward smaller budgets. This year, 41 percent manage budgets of less than $250,000 compared to 31 percent in the 2015 study. This trend is driven by respondents outside of the U.S. and Canada, where a greater percentage of respondents manage IT budgets of less than $250,000. On the other end, one out of five IT decision-makers responding (21 percent) manage budgets at or above $3 million. This percentage is highest in the U.S. at 26 percent compared to 19 percent for Canadian respondents and 18 percent for those outside of the U.S. and Canada.

Globally, 38 percent of the IT decision-makers responding expect to see a budget increase in 2017. Nearly the same percentage (37 percent) expect their budgets to be flat compared to the prior year. One in four expects to see a budget decrease. Two trends are worth noting. First, there is regional variation in budget expectations with organizations from Latin America and Asia-Pacific more likely than their counterparts in EMEA, the United States and Canada to express optimism for budget increases. Secondly, there has been a consistent decline in the expectation for budget increases among respondents.

ANNUAL IT BUDGET (EXCLUDING SALARIES)

Budget	2017	2016	2015
Up to $249,999	41%	38%	31%
$250,000 - $499,999	14%	16%	13%
$500,000 - $999,999	10%	10%	12%
$1 million - $2.9 million	14%	14%	19%
$3.0 million+	21%	22%	25%
Total	100%	100%	100%

FORECASTED BUDGET CHANGE (EXCLUDING SALARIES)

	U.S. & Canada			Latin America			EMEA			Asia-Pacific		
	2017	2016	2015	2017	2016	2015	2017	2016	2015	2017	2016	2015
Increase	39%	50%	47%	44%	51%	58%	32%	44%	43%	47%	56%	62%
Decrease	22%	18%	18%	29%	25%	17%	28%	22%	21%	22%	20%	16%
No Change	39%	33%	35%	27%	24%	25%	40%	34%	36%	31%	25%	22%

SKILLS ASSESSMENT

The top issue on the minds of IT decision-makers in organizations of all sizes is whether their teams have the skills needed to meet organizational goals. Globally, 68 percent of IT decision-makers responding said their teams presently face a shortage of necessary skills. The percentage reporting a gap is greatest in the U.S., where it rises to 73 percent. These numbers represent a marked increase in last year's findings when, globally, 30 percent of IT decision-makers reported a present skills shortage.

Seventy-five percent of those who face a skills gap today anticipate one over the next two years. Of those not currently facing a gap, 28 percent believe one will develop over the next 12 to 24 months. IT decision-makers attributed the gaps mostly to a lack of training investment (43 percent). Thirty-six percent said having difficulty attracting talent to their specific industry is a factor as well. One-third of the respondents reported having difficulty paying what candidates demand.

PERCENT REPORTING A CURRENT SKILLS GAP
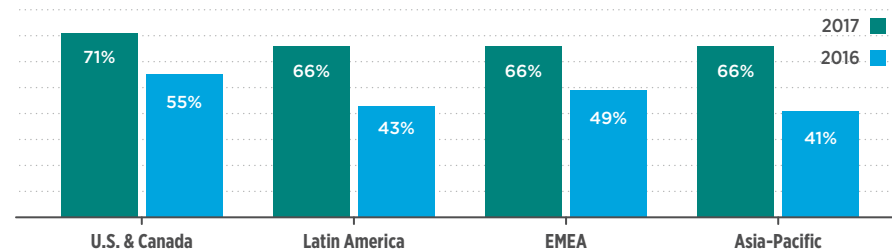
Regardless of the causes, skills shortages have definitive impact on the organizations facing them. For the second year, the predominant concern is increased stress upon existing employees. This is most notable in the U.S. more so than Canada and significantly less so in EMEA, Latin America and Asia-Pacific. Skills gaps also cause IT teams to have difficulty meeting quality objectives with 43 percent citing this as an issue. Following closely are delays in developing new products and services (39 percent) and in deploying hardware and software (36 percent).

REASONS BEHIND THE SKILLS GAPS

Reason	2017	2016
We have not invested enough in training to develop the skills we need.	43%	45%
It's difficult to attract candidates with the skills we need to our industry.	36%	42%
We cannot pay what candidates demand.	33%	38%
We would hire more people if there were more qualified candidates.	29%	32%
Our current training programs are not effective in developing the skills we need our employees to have.	26%	26%
We have not effectively anticipated the skills we need.	24%	26%
We do not have the ability to track and measure the skills that exist in our employee base.	20%	18%
Other skills gap driver.	8%	7%

IMPACT OF SKILLS GAPS ON THE ORGANIZATION

Impact	2017	2016
Increased stress on existing employees	61%	68%
Difficulty meeting quality objectives	43%	47%
Delays in developing new products or services	39%	42%
Delayed deployments of new hardware and/or software	36%	42%
Increased operating costs	31%	37%
Declining customer satisfaction	31%	37%
Loss of business to competitors	27%	27%
Loss of revenue	23%	27%

HIRING AREAS

For the second year, IT decision-makers reported having the most difficult time finding qualified cybersecurity talent with 31 percent selecting it. This skews up to 37 percent for organizations in Latin America. Cloud computing is a challenging hiring area as well with 28 percent selecting it. Respondents from the U.S. and Canada reported fewer difficulties in hiring cloud specialists compared to EMEA, Asia-Pacific and Latin America.

Company size matters when it comes to hiring talent. Larger IT operations, that is, those with 250 or more full-time employees, frequently find it easier to acquire talent than their smaller counterparts. The benefits that larger companies can offer make it easier for them to acquire talent in areas as diverse as application development, business analysis and project management. However, like their smaller colleagues, they are having an equally difficult time finding and hiring talent in cybersecurity and all things cloud.

> *A major benefit I see from training relates to an interest within the organization to adopt Amazon Web Services. I feel that my newly obtained AWS certifications will allow me to contribute to the success of those projects.*
>
> **– SURVEY RESPONDENT**

TOP 10 CHALLENGE AREAS FOR FINDING QUALIFIED TALENT

Challenge Area	U.S. & Canada	Latin America	EMEA	Asia-Pacific	Total
Cybersecurity	31%	37%	30%	31%	31%
Cloud Computing	25%	36%	30%	32%	28%
Networking and Wireless	19%	23%	21%	18%	19%
Application Development	18%	14%	20%	14%	18%
Infrastructure as a Service (IaaS)	15%	23%	18%	22%	18%
Enterprise Architecture	17%	16%	19%	14%	17%
Virtualization	14%	22%	19%	20%	17%
Leadership and Management	16%	20%	15%	18%	16%
Analytics and Big Data	16%	17%	13%	20%	16%
Data Center	13%	28%	16%	17%	16%

THE VALUE OF TRAINING

Sixty percent of IT decision-makers said their organizations offer formal training for technical employees. More than 80 percent of those organizations that provide formal training report that it is effective in developing the skills needed. A similar percentage indicated they effectively anticipate the skill sets needed to achieve organizational objectives.

Just because an organization offers its employees formal training does not ensure that training will happen. In the current study, 60 percent of the IT decision-makers surveyed reported that training was available, yet only 49 percent of that group authorized training for their team members. This is lowest in the U.S. (45 percent) and EMEA (46 percent) and highest in Canada (64 percent), Latin America (59 percent) and Asia-Pacific (52 percent).

THE VALUE OF CERTIFICATIONS

For those who did approve training, the majority (75 percent) did so to prepare their team members for certification or recertification. A whopping 94 percent reported that their certified team members bring added value above and beyond the cost of certification.

That value shows in various ways. More than 40 percent of the IT decision-makers who sent their team members for certification or recertification training did so to fulfill client requirements. The percentage is higher in Latin America (52 percent) and Asia-Pacific (49 percent). These decision-makers also reported that certified team members troubleshoot issues and complete projects more quickly, have increased productivity, and have fewer—if any—skills gaps, which is especially notable among U.S. respondents.

When asked to estimate the economic benefit of the additional skills that certified employees bring to the table compared to their noncertified counterparts, one in four IT decision-makers (28 percent) said it exceeds $20,000 annually. Nearly 30 percent projected the benefit to fall between $10,000 and $19,999, and 43 percent estimated the annual value to be less than $10,000.

IT decision-makers whose firms or organizations have a formal training plan, and who authorized training in the prior year, are significantly more likely to authorize training than those who did not in the prior year. This is consistent across geographies and curriculum areas.

Nearly 60 percent of IT decision-makers reported they are likely to authorize staff to take skills-based and certification-focused technical training in the coming year. This percentage rises to nearly 70 for those who authorized training in 2016 and drops to 45 for those who did not. The likelihood to approve

BENEFITS FROM CERTIFIED PERSONNEL

Benefit	U.S. & Canada	Latin America	EMEA	Asia-Pacific	Total
Meets client requirements	41%	52%	46%	49%	44%
Troubleshooting issues takes less time	38%	41%	40%	43%	40%
Projects are completed faster	33%	47%	38%	36%	36%
Boosts productivity	38%	36%	35%	30%	36%
Closes organizational skill gaps	40%	31%	34%	32%	36%
Gives us an edge over competitors	33%	34%	38%	31%	34%
Products and services are deployed quicker	30%	41%	27%	27%	30%
Reduces employee turnover	27%	33%	24%	12%	24%
Makes hiring easier	25%	21%	19%	22%	22%
Reduces direct or indirect expenses	16%	17%	19%	9%	16%

ESTIMATED ANNUAL ECONOMIC BENEFIT CERTIFIED EMPLOYEES BRING TO THE ORGANIZATION

43% $9,999 or Less

29% $10,000–$19,999

28% $20,000 or More
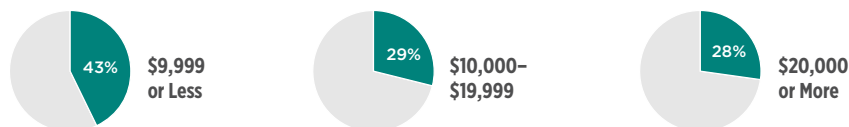
staff to attend training for business process improvement, leadership skills and/or project management falls to between 30 and 35 percent. It's also higher for those who approved last year and lower for those who did not.

This year, IT decision-makers said they are facing challenges regarding:

*   Workload pressures due to expansions and acquisitions.
*   Lack of necessary skills to address current issues.
*   Regional differences in job process, budgeting and strategic priorities.
*   Generational differences in work ethics.
*   All things staffing, including retention strategies for key employees, more efficient hiring procedures, and the ability to address skills gaps through formalized training.

LOOKING FORWARD

NO MATTER THE COMPANY SIZE, **CLOUD COMPUTING**

IS THE **TOP TECH INTEREST AREA FOR 2017.**

Respondents around the world rank cloud computing at the top of the list of technology areas they expect their organizations to focus on in the coming year. Cybersecurity and virtualization are close behind.

Globally, 39 percent of respondents chose cloud computing. Its importance ranges from 29 percent for Egyptian respondents to 52 percent for Australian and 51 percent for United Kingdom respondents.

In the U.S. and Canada, cloud computing is tied with cybersecurity, which ranks second outside the U.S. and Canada. The degree of focus on cybersecurity varies significantly across regions and within countries. Though 36 percent of global respondents selected it, only 27 percent of Canadian respondents did compared to 41 percent of their U.S. counterparts. Fifty-four percent of respondents in Japan and 39 percent of respondents in the United Kingdom reported focusing on cybersecurity while 25 percent of respondents in Egypt and 29 percent of respondents in Brazil selected cybersecurity as a focus area.

Cloud, cybersecurity and virtualization are key concerns for all companies despite their size. The importance of other topics varies with a company's number of employees. Expanding networking and wireless capabilities ranks higher for smaller organizations and lower for larger firms, that is, those with 5,000 or more employees. Software as a Service and Infrastructure as a Service rank in the top ten for all companies in association with a move toward cloud-based operations.

Analytics and big data rank high for larger organizations as do Agile and Scrum methodologies and Platform as a Service. Smaller organizations are more interested in application development than their larger counterparts. A focus on operating systems is also more common in smaller organizations, especially those with fewer than 1,000 employees.

TECH INTEREST AREAS FOR 2017

Interest Area	U.S. & Canada	Latin America	EMEA	Asia-Pacific	Total
Cloud Computing	37%	38%	41%	45%	39%
Cybersecurity	37%	36%	36%	35%	36%
Virtualization	27%	32%	30%	29%	28%
Networking and Wireless	26%	33%	26%	27%	26%
Software as a Service (SaaS)	23%	23%	26%	24%	24%
Data Center	20%	32%	25%	25%	23%
Infrastructure as a Service (IaaS)	20%	26%	27%	28%	23%
Analytics and Big Data	20%	18%	18%	21%	20%
Project Management	20%	16%	16%	14%	18%
Application Development	19%	12%	17%	15%	17%
ITIL and IT Service Management	15%	22%	19%	19%	17%
Mobility	17%	22%	18%	17%	17%
Internet of Things (IoT)	13%	22%	20%	20%	16%
Platform as a Service (PaaS)	14%	16%	18%	18%	16%
Leadership and Management	18%	14%	14%	14%	16%
Operating Systems	17%	13%	16%	11%	16%
Agile and Scrum	16%	11%	15%	15%	15%
Enterprise Architecture	15%	11%	16%	13%	15%
Business Analysis	16%	13%	14%	10%	14%
Collaboration, Telephony and Unified Communications	14%	22%	14%	12%	14%
DevOps	12%	8%	14%	13%	13%
Enterprise Data Storage	13%	10%	12%	9%	12%
Data Policy and Governance	13%	6%	11%	9%	11%
Web Development	12%	9%	11%	9%	11%
Business Skills	10%	10%	9%	8%	9%
Open Source	7%	11%	9%	8%	8%
Middleware	5%	4%	4%	4%	5%
Multimedia Production	3%	2%	3%	2%	3%
Other	4%	2%	3%	2%	3%
Total	6,432	739	3,292	2,057	12,520

RANKING OF TECH INTEREST AREAS BY NUMBER OF EMPLOYEES

Interest Area	49 or Fewer	50 –249	250 –999	1,000 –4,999	5,000 or More	Total
Cloud Computing	1	1	1	1	1	1
Cybersecurity	3	2	2	2	2	2
Virtualization	4	3	3	3	5	3
Networking and Wireless	2	3	4	4	7	4
Software as a Service (SaaS)	5	7	6	4	3	5
Data Center	7	5	5	6	8	6
Infrastructure as a Service (IaaS)	6	5	7	6	3	6
Analytics and Big Data	20	11	10	8	5	8
Project Management	10	9	8	10	15	9
Application Development	8	8	10	12	15	10
ITIL and IT Service Management	10	15	9	9	15	10
Mobility	13	11	13	10	12	10
Internet of Things (IoT)	10	18	17	20	8	13
Platform as a Service (PaaS)	15	15	20	16	10	13
Leadership and Management	16	13	13	13	13	13
Operating Systems	8	9	10	16	22	13
Agile and Scrum	21	22	20	13	10	17
Enterprise Architecture	16	18	17	13	13	17
Business Analysis	16	13	16	18	19	19
Collaboration, Telephony and Unified Communications	16	18	13	18	20	19
DevOps	23	22	23	20	18	21
Enterprise Data Storage	23	21	17	22	23	22
Data Policy and Governance	25	25	22	22	20	23
Web Development	13	15	23	24	24	23
Business Skills	21	24	25	25	24	25
Open Source	25	26	26	26	26	26
Middleware	27	27	27	27	27	27
Multimedia Production	28	28	27	28	28	28

BUSINESS CONDITIONS

Forty-eight percent of respondents reported a moderate or significant increase in the volume of projects they're working on, and 36 percent reported a slight increase. These trends are largely consistent across the regions although respondents in the U.S. and Canada were somewhat more likely to report seeing no increase in project levels.

Respondents were nearly six times more likely to report that business is good compared to those reporting they are seeing the worst ever conditions (22 percent versus 4 percent). Overall, one-third of respondents indicated business conditions are good or significantly improving.

Respondents reported significant challenges in workload and hiring. Nearly two-thirds (64 percent) of respondents indicated their workloads are challenging with 40 percent reporting workloads that are either very challenging or the worst they've seen. Nearly two-thirds reported that hiring qualified talent is a significant issue. This echoes the challenges IT decision-makers reported in finding the right people for their open positions.

> "
>
> *A workplace challenge we are facing involves a lack of communication from senior management in direction/strategy as related to cloud.*
>
> **– SURVEY RESPONDENT**

STATE OF IT AND BUSINESS PROJECTS

15%

Significant Increase

30%
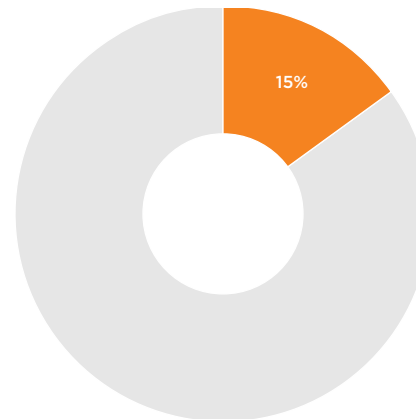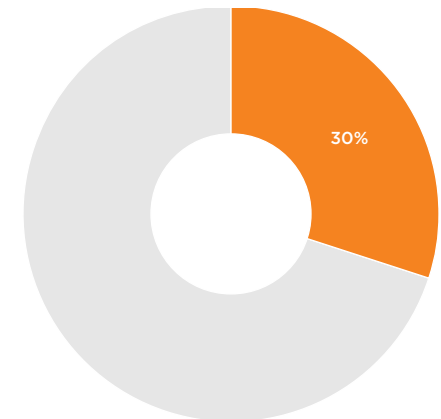
Moderate Increase

36%

Slight Increase

18%
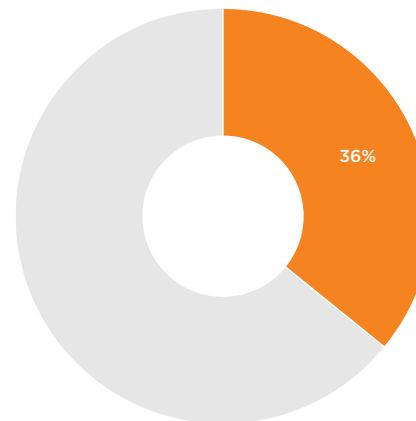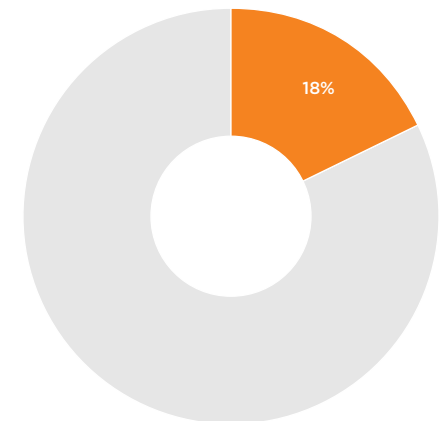
No Increase

CONCLUSIONS

Good news abounds for IT professionals this year. The majority of respondents are currently satisfied in their roles and reported higher salaries along with improving business conditions. However, heavy workloads are troublesome and can't be ignored.

Forty percent of respondents believe their workload is either very challenging or the worst they've ever seen while 68 percent of IT decision-makers said their teams presently face a shortage of necessary skills.

Decision-makers and their companies would be wise to investigate ways of lessening stress on IT staff. Otherwise, slow-creeping damage could lead to widespread dissatisfaction. As technology continues to shift and adjustments are needed, agility and flexibility are beneficial—if not required—traits for IT professionals and departments around the globe for success as well as stress reduction.

More important, however, is the need to address skills gaps. Whether through self-study, formal classroom training or another learning method, gaining expertise in the technology areas IT decision-makers are focused on in the coming year seems like an obvious first step to closing these damaging gaps. While the allure of a quick fix is undeniable, hiring to cover skill

gaps isn't scalable—it's a short-term solution. Global Knowledge President and Chief Executive Office Sean Dolan cuts to the chase, "The typical IT product lifecycle continues to shrink and the skills gap continues to widen. Organizations can't buy their way out of this problem; they have to look inward to start training and retraining their people."

Ongoing professional development is critical for keeping teams up to speed and enabling them to complete tasks needed for organizational success. How that training is consumed has seen a dramatic shift due in part to economic factors and the preferences of a younger IT workforce. The ability to train anywhere and at any time is the new norm, but regardless of what format training takes, one thing is undeniable: training maximizes your career, the people within your organization and drives business forward.

SURVEY METHODOLOGY

The 2017 IT Skills and Salary Survey was conducted online from September 12 through November 4, 2016, using the Qualtrics Insight Platform. Global Knowledge and partner companies and organizations emailed more than half a million survey invitations to recipients from their databases. Links were also provided in online newsletters. The survey yielded more than 12,500 completed responses from IT employees around the globe, with more than 50 percent coming from the United States and Canada and the remainder from countries from Afghanistan to Zimbabwe. The online survey was tabulated using IBM SPSS and Q Research software.

ABOUT GLOBAL KNOWLEDGE

Global Knowledge is the worldwide leader in IT training and learning services. We empower organizations, teams and individuals with the skills and best practices necessary to leverage the technologies and competencies critical for sustained success and to create competitive advantages. With over 15 corporate offices around the world, our 1,500 employees are helping clients succeed in over 100 countries. Learn more at www.globalknowledge.com.

THANKS TO OUR PARTNERS

Global Knowledge extends a special thank you to our partners for helping make this year's survey possible:

AWS	Certification Partners	Cisco	Citrix	CompTIA	DELL
IBM	ISACA	Juniper	Microsoft	Red Hat	

APPENDIX

COMPLETE LISTS OF SALARIES BY CERTIFICATION AND STATE/PROVINCE

To ensure the integrity of the information we provide, for a certification to appear in our "highest-paying" and "most popular" lists, we require that it has data from at least 150 respondents. The lists below do not have that requirement and are for information purposes only. The fewer responses a certification receives, the less reliable the data, so use your judgment when drawing conclusions.

SALARIES BY CERTIFICATION

AREA	CERTIFICATION	U.S. & CANADA			LATIN AMERICA			EMEA			ASIA-PACIFIC		
		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
App Dev & Programming	C Programming Language Certified Associate (CLA)	$92,810	$78,000	39	–	–	0	$44,185	$42,500	20	$32,923	$28,800	10
	C++ Certified Associate Programmer (CPA)	$92,484	$79,000	50	$26,625	$24,750	4	$46,173	$23,156	12	$43,449	$24,000	9
	C++ Certified Professional Programmer (CPP)	$108,245	$78,000	35	$24,840	$24,840	1	$70,947	$69,319	8	$26,757	$26,757	2
	C Certified Professional Programmer (CLP)	$97,274	$80,000	9	–	–	0	$41,382	$41,146	3	$24,000	$24,000	2
	MCSD: Universal Windows Platform	$95,647	$83,000	35	$30,000	$30,000	5	$62,659	$55,794	16	$40,783	$34,250	6
	MCSD: Web Applications	$98,643	$94,000	62	$66,345	$40,965	6	$56,770	$50,042	48	$50,893	$32,500	25
	MCSD: Windows Store Apps	$109,438	$102,000	8	–	–	0	$43,564	$31,250	8	$48,953	$30,000	6
	JBoss Certified Application Administrator (JBCAA)	$85,496	$81,671	7	$28,750	$28,750	1	$56,090	$54,000	3	$55,000	$55,000	2
	Java-related	$107,472	$100,000	23	$15,521	$15,521	2	$67,375	$60,000	7	$58,322	$64,498	4
	Other App Dev Certifications	$102,460	$93,000	61	$25,667	$18,000	3	$52,478	$50,000	29	$59,723	$67,565	20
Avaya	Avaya Certified Implementation Specialist (ACIS)	$84,607	$86,500	18	$36,683	$22,750	6	$43,317	$27,923	6	$27,496	$14,885	8
	Avaya Certified Support Specialist (ACSS)	$83,614	$81,600	41	$12,768	$12,768	2	$47,045	$33,167	4	$20,084	$16,500	7
	Avaya Implementation Professional Specialist (AIPS)	$75,715	$75,000	17	$45,000	$45,000	1	$17,367	$17,000	3	$50,000	$50,000	1
	Avaya Support Professional Specialist (ASPS)	$76,893	$67,500	14	–	–	0	$22,138	$24,000	5	$23,748	$5,843	3
	Other Avaya Certifications	$80,221	$69,983	16	$41,050	$27,100	4	$25,956	$26,240	14	$15,640	$11,680	6

AREA	CERTIFICATION	U.S. & CANADA			LATIN AMERICA			EMEA			ASIA-PACIFIC		
		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
AWS	AWS Certified Solutions Architect – Associate	$119,233	$119,700	303	$58,425	$36,400	17	$62,169	$60,000	202	$57,346	$39,618	202
	AWS Certified Solutions Architect – Professional	$116,838	$115,500	70	$122,000	$112,000	4	$73,686	$72,900	25	$62,578	$50,000	35
	AWS Certified Developer – Associate	$116,456	$111,488	118	$98,500	$72,500	4	$72,300	$73,000	51	$59,747	$58,822	77
	AWS Certified SysOps Administrator – Associate	$111,966	$108,560	100	$97,500	$77,500	4	$70,671	$69,707	61	$64,116	$60,686	50
	AWS Certified DevOps Engineer – Professional	$108,315	$107,500	34	$137,000	$137,000	2	$82,551	$80,000	15	$93,006	$78,840	14
Business Analysis	Certification of Competency in Business Analysis (CCBA)	$82,826	$75,000	45	$30,888	$29,665	3	$67,750	$69,500	6	$26,901	$23,100	5
	PMI Professional in Business Analysis (PMI-PBA)	$99,991	$86,500	32	$52,875	$41,250	4	$109,370	$100,000	7	$102,867	$118,600	3
	Other Business Analysis Certifications	$81,461	$73,600	80	$29,533	$32,000	3	$75,359	$64,000	27	$90,302	$30,000	11
Business Architecture	TOGAF 9.1	$95,857	$91,325	74	$57,708	$46,000	6	$71,973	$75,000	75	$78,776	$85,500	32
	Other Business Architecture Certifications	$92,362	$75,000	14	$39,400	$39,400	2	$91,001	$90,000	15	$64,100	$66,000	5
Business Process	Six Sigma Black Belt	$108,626	$100,000	36	$42,900	$42,900	2	$98,094	$99,000	9	$58,908	$34,500	7
	Six Sigma Green Belt	$103,701	$102,210	91	$32,528	$33,950	6	$62,867	$61,725	28	$90,002	$33,000	21
	Six Sigma Master Black Belt	$127,885	$100,000	13	–	–	0	$133,250	$145,000	4	$65,300	$65,300	2
	Other Business Process Certifications	$98,050	$90,000	82	$53,497	$43,108	6	$62,287	$58,000	37	$47,933	$48,000	19
Cisco	Cisco Business Value Specialist	$92,204	$82,500	36	$46,619	$45,000	17	$55,007	$37,500	31	$32,619	$22,800	12
	Cisco Business Value Practitioner	$98,193	$88,000	19	$48,726	$46,278	3	$58,967	$50,000	12	$35,490	$18,000	5
	Cisco Business Value Analyst	$91,392	$82,665	29	$34,280	$33,400	5	$51,441	$36,585	14	$30,125	$16,273	6
	Cisco Business IT Roadmap Specialist	$106,208	$93,500	18	$34,062	$26,000	7	$51,339	$40,000	7	$43,012	$23,100	15
	Cisco Certified Entry Networking Technician (CCENT)	$70,245	$65,835	301	$18,776	$17,000	33	$35,178	$29,593	140	$32,479	$20,033	58
	CCNA: Routing and Switching	$80,932	$75,000	797	$24,461	$18,144	269	$32,851	$25,000	822	$22,741	$12,000	610
	CCNP: Routing and Switching	$90,945	$89,550	193	$30,968	$24,578	70	$37,093	$28,250	274	$26,422	$14,962	193
	CCIE: Routing and Switching	$106,184	$105,000	33	$42,125	$35,250	14	$61,648	$56,000	39	$43,292	$24,803	22

AREA	CERTIFICATION	U.S. & CANADA			LATIN AMERICA			EMEA			ASIA-PACIFIC		
		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Cisco (cont.)	Cisco Certified Design Associate (CCDA)	$103,624	$99,750	78	$29,752	$26,000	41	$56,525	$44,210	90	$37,848	$20,000	33
	Cisco Certified Design Professional (CCDP)	$106,356	$105,000	41	$32,087	$27,500	14	$51,010	$49,500	61	$41,915	$25,002	25
	Cisco Certified Design Expert (CCDE)	–	–	0	$67,550	$67,550	1	$55,435	$26,400	5	$38,146	$29,230	5
	CCNA: Wireless	$90,842	$93,000	75	$16,929	$14,400	21	$34,644	$30,000	65	$41,534	$36,351	33
	CCNP: Wireless	$104,020	$112,000	15	$15,600	$15,600	1	$35,143	$25,000	7	$26,822	$17,977	8
	CCIE: Wireless	$75,500	$41,500	3	$16,000	$16,000	2	$30,800	$26,400	3	$20,521	$21,500	5
	CCNA Security	$84,652	$80,000	185	$29,210	$24,000	41	$38,164	$28,280	163	$29,783	$16,057	79
	CCNP Security	$100,891	$96,720	39	$41,407	$35,000	12	$41,526	$35,000	47	$39,195	$26,750	22
	CCIE Security	$81,688	$80,000	8	$58,388	$44,389	6	$67,643	$64,500	10	$93,579	$22,500	11
	CCNA Data Center	$95,113	$88,400	36	$31,981	$31,750	12	$47,556	$40,373	32	$43,359	$40,000	15
	CCNP Data Center	$91,228	$105,000	9	$38,480	$38,480	2	$37,288	$32,000	15	$51,970	$29,230	9
	CCIE Data Center	$100,400	$110,000	14	$67,550	$67,550	1	$54,426	$51,090	8	$25,857	$21,550	8
	CCNA Collaboration	$85,956	$80,000	60	$27,267	$25,375	22	$42,610	$34,850	46	$29,746	$25,001	22
	CCNP Collaboration	$107,086	$107,500	22	$30,771	$28,750	15	$57,452	$40,000	19	$33,440	$32,964	15
	CCIE Collaboration	$129,000	$140,500	6	$49,354	$44,333	4	$70,867	$60,000	12	$21,775	$21,775	2
	CCNA Cloud	$68,941	$76,333	12	$22,303	$24,703	4	$48,767	$40,000	9	$36,028	$16,500	5
	CCNP Cloud	$67,239	$70,000	9	–	–	0	$37,667	$30,000	3	–	–	0
	CCNA Industrial	$78,592	$78,592	2	$10,000	$10,000	1	$30,750	$30,000	4	$65,830	$43,000	3
	CCNA Service Provider	$105,635	$93,757	12	$21,262	$24,750	5	$39,785	$26,833	12	$10,646	$10,188	6
	CCNP Service Provider	$77,842	$66,275	6	$40,000	$40,000	2	$40,877	$40,000	13	$26,573	$16,500	7
	CCIE Service Provider	$103,420	$110,000	5	$38,425	$41,500	6	$50,610	$43,000	11	$21,417	$18,000	3
	Other Cisco Certifications	$84,171	$79,000	61	$30,943	$27,999	31	$38,729	$30,442	60	$32,862	$25,373	29

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		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Citrix	Citrix Certified Associate – Networking (CCA-N)	$98,583	$92,000	163	$30,691	$25,750	28	$58,080	$52,850	128	$58,062	$41,834	56
	Citrix Certified Associate – Virtualization (CCA-V)	$96,231	$92,000	241	$30,193	$30,000	41	$58,190	$55,000	244	$41,602	$24,300	158
	Citrix Certified Expert – Virtualization (CCE-V)	$112,844	$107,000	109	$34,997	$36,104	18	$71,867	$70,000	114	$75,919	$72,500	32
	Citrix Certified Professional – Mobility (CCP-M)	$106,365	$98,000	59	$31,417	$37,500	12	$67,931	$60,000	51	$51,062	$24,000	24
	Citrix Certified Professional – Networking (CCP-N)	$107,927	$105,000	101	$26,319	$25,000	27	$58,059	$55,900	95	$52,824	$31,000	39
	Citrix Certified Professional – Virtualization (CCP-V)	$102,353	$97,000	153	$31,213	$31,700	30	$65,850	$61,875	182	$50,091	$29,230	83
Cloud (non-AWS)	Big Data Foundation	$83,227	$75,000	11	$100,000	$100,000	1	$73,244	$61,114	5	$39,200	$39,200	2
	Cloud Technology Associate	$96,119	$90,760	22	$19,703	$19,703	2	$62,644	$36,000	9	$18,437	$10,985	6
	Professional Cloud Administrator	$87,947	$85,760	14	$14,750	$14,750	1	$63,908	$62,830	6	$26,388	$23,100	5
	Professional Cloud Developer	$87,223	$91,520	9	–	–	0	$85,970	$85,970	2	$38,400	$38,400	1
	Professional Cloud Security Manager	$99,509	$88,800	10	–	–	0	$81,125	$62,500	4	$159,875	$45,750	4
	Professional Cloud Service Manager	$85,910	$75,000	13	–	–	0	$68,000	$68,000	2	$12,250	$12,250	2
	Professional Cloud Solutions Architect	$124,075	$122,500	4	$121,000	$121,000	2	$74,095	$75,660	7	$18,065	$12,930	4
	CompTIA Cloud Essentials (CEP)	$105,498	$94,000	51	$28,879	$22,000	6	$46,509	$36,000	17	$75,391	$59,335	15
	Google Cloud Platform Qualified Solution Developer	$74,731	$70,000	5	$64,000	$64,000	1	$74,550	$76,000	5	$38,100	$39,200	4
	Google Cloud Platform Qualified Systems Operations Professional	$80,082	$62,828	8	–		0	$84,000	$78,000	4	$34,667	$40,000	3
	Google Cloud Platform Qualified Data Analyst	$105,358	$66,828	4	–	–	0	$88,667	$80,000	3	$40,000	$40,000	1
	MCSD: Azure Solutions Architect	$119,128	$120,000	23	$66,062	$51,000	6	$68,120	$65,778	27	$95,706	$40,000	17
	Administering Microsoft Azure Infrastructure Solutions (MS Spec)	$90,993	$92,040	27	$44,193	$27,500	11	$66,769	$68,550	35	$41,546	$29,904	30
	Architecting Microsoft Azure Solutions (MS Spec)	$95,197	$101,000	22	$69,500	$52,750	6	$66,033	$72,500	20	$79,684	$36,700	20
	Developing Microsoft Azure Solutions (MS Spec)	$89,469	$89,260	22	$47,375	$52,750	4	$61,296	$40,150	13	$40,376	$27,500	8
	MTA: Cloud Fundamentals	$100,649	$91,400	14	–	–	0	$49,940	$52,700	5	$44,277	$23,100	7

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Cloud (non-AWS)	CompTIA Cloud+	$93,122	$85,600	23	$37,538	$37,538	2	$36,296	$25,250	8	$20,066	$12,300	5
CompTIA	CompTIA A+	$77,053	$70,000	1130	$25,445	$18,500	47	$44,496	$38,000	277	$47,839	$31,000	95
	CompTIA CASP	$97,913	$94,000	34	$18,000	$18,000	1	$93,067	$125,000	3	$65,632	$66,346	6
	CompTIA Cloud Essentials (CEP)	$105,498	$94,000	51	$28,879	$22,000	6	$46,509	$36,000	17	$75,391	$59,335	15
	CompTIA IT Fundamentals	$82,860	$70,645	79	$23,000	$26,500	3	$34,075	$26,500	21	$23,871	$12,438	13
	CompTIA Mobility+	$73,992	$73,085	10	–	–	0	$46,191	$45,660	4	$12,500	$12,500	1
	CompTIA Network+	$79,459	$75,000	758	$29,280	$24,775	27	$44,747	$38,498	140	$41,370	$27,000	28
	CompTIA Project+	$92,593	$88,000	205	$33,821	$43,000	3	$48,275	$50,000	27	$67,063	$55,500	16
	CompTIA Security+	$87,673	$83,000	677	$32,314	$23,750	18	$53,490	$46,944	101	$60,210	$53,500	35
	CompTIA Server+	$84,708	$79,255	112	$38,429	$31,750	8	$54,036	$50,275	56	$29,769	$13,000	17
	CompTIA Cloud+	$93,122	$85,600	23	$37,538	$37,538	2	$36,296	$25,250	8	$20,066	$12,300	5
	CompTIA Linux+	$78,593	$74,331	96	$29,205	$29,350	4	$50,313	$48,359	32	$42,994	$46,573	11
	Other CompTIA Certifications	$96,669	$90,000	40	$34,159	$35,215	6	$77,066	$66,650	4	$57,404	$57,404	2
Database	Oracle Database 12c Administrator Certified Professional	$86,043	$70,000	26	$31,150	$31,150	2	$58,373	$54,875	6	$24,290	$23,375	10
	Oracle Database 12c Certified Implementation Specialist	$87,164	$88,500	14	$150,000	$150,000	1	–	–	0	–	–	0
	Upgrade to Oracle Database 12c OCP, OCM	$88,588	$74,250	8	–	–	0	$150,000	$150,000	1	–	–	0
	Oracle Database Foundations Certified Junior Associate (novice-level certification)	$110,463	$100,000	9	–	–	0	$6,400	$6,400	1	$9,738	$9,738	1
	Oracle Database 12c Administrator Certified Professional (upgrade)	$98,571	$88,000	7	–	–	0	$53,000	$36,000	3	$15,600	$15,600	1
	Upgrade to Oracle Database 12c Administrator Certified Master	$72,300	$70,000	5	–	–	0	–	–	0	–	–	0
	Oracle Database 12c Administrator Certified Master	$68,333	$70,000	3	–	–	0	–	–	0	–	–	0
	Oracle Data Warehousing 11g Certified Implementation Specialist	$79,667	$71,250	6	–	–	0	$27,000	$27,000	1	–	–	0
	Oracle Database 11g Administrator Certified Associate	$82,050	$70,000	10	$10,343	$12,440	3	$51,625	$40,000	13	$31,569	$21,375	12

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Database (cont.)	Oracle Database 11g Administrator Certified Master	$65,000	$40,000	3	–	–	0	$75,660	$75,660	1	$112,565	$112,565	2
	Oracle Database 11g Certified Implementation Specialist	$90,000	$90,000	2	$28,530	$40,000	3	–	–	0	$120,000	$120,000	1
	Oracle Database 11g Security Certified Implementation Specialist	$65,222	$72,665	3	$42,500	$42,500	1	–	–	0	–	–	0
	Upgrade to Oracle Database 11g OCP, OCM	$72,667	$66,000	3	–	–	0	$119,553	$119,553	2	$102,500	$100,000	4
	Oracle Database 11g Administrator Certified Master (upgrade)	–	–	0	–	–	0	$13,185	$13,185	2	$7,000	$7,000	1
	Oracle Database 11g Administrator Certified Professional (upgrade)	$105,800	$118,000	5	–	–	0	$40,000	$40,000	1	$47,495	$22,485	3
	MCSA: SQL 2016 Database Development	$87,092	$75,000	45	$19,980	$16,794	8	$53,545	$44,500	28	$42,599	$38,400	15
	MCSA: SQL 2016 Database BI Development	$98,808	$95,000	19	$24,650	$16,450	6	$76,048	$60,000	18	$71,250	$72,500	4
	MCSA: SQL 2016 Database Development	$109,064	$93,500	30	$18,483	$16,200	6	$56,086	$47,154	15	$58,096	$38,400	9
	MCSA: SQL Server 2012	$88,612	$85,000	133	$35,543	$27,135	22	$47,740	$43,500	100	$49,228	$30,000	47
	MCSA: SQL Server	$90,303	$83,750	188	$32,103	$23,157	27	$48,632	$45,000	125	$48,553	$30,000	57
	Other Oracle/DB Certifications	$87,671	$83,750	96	$22,397	$20,869	11	$49,169	$49,375	52	$52,868	$45,000	32
Data Center	Data Center Infrastructure Specialist (DCIS)	$101,158	$105,000	25	$42,445	$28,750	8	$55,770	$51,700	22	$22,680	$15,600	17
	Data Center Operations Specialist (DCOS)	$119,000	$117,250	4	$27,500	$27,500	1	$41,250	$23,500	5	$11,074	$5,675	6
	Data Center Operations Manager (DCOM)	$82,143	$77,000	7	$38,500	$38,500	2	$88,100	$90,000	5	$49,650	$36,000	4
	Data Center Engineering Specialist (DCES)	$104,375	$84,000	8	$12,000	$12,000	1	$29,563	$19,875	4	$29,787	$40,000	3
	Data Center Infrastructure Expert (DCIE)	$106,071	$114,500	7	–	–	0	–	–	0	$43,767	$33,500	6
	Data Center Technology Professional (DCTP)	$107,000	$102,250	6	$38,000	$38,000	2	$35,824	$35,824	2	$47,355	$31,000	10
	Data Center Manager (DCM)	$90,667	$92,000	6	$32,250	$32,250	2	$57,650	$55,000	4	$91,608	$84,601	6
	Data Center Expert (DCE)	$96,700	$102,500	5	$40,000	$40,000	1	$79,026	$75,000	7	$45,305	$45,305	2
	Data Center Authority (DCA)	$76,000	$76,000	2	–	–	0	$16,600	$16,600	1	$20,000	$20,000	1
	Data Center Certified Auditor (DCCA)	$143,790	$149,000	3	$21,261	$21,261	2	$60,000	$60,000	1	$52,550	$52,550	1

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Data Center (cont.)	Data Center Certified Instructor (DCCI)	–	–	0	–	–	0	–	–	0	–	–	0
	MCSE: Private Cloud	$99,729	$92,000	51	$22,010	$21,500	14	$50,781	$43,500	81	$43,840	$27,300	33
	MCSE: Server Infrastructure	$94,921	$92,000	329	$30,927	$24,328	28	$54,305	$50,775	250	$61,939	$35,500	116
	MCSA: Windows Server 2008	$93,317	$87,943	378	$31,796	$25,500	42	$51,833	$48,000	339	$39,730	$20,000	165
	MCSA: Windows Server 2012	$87,839	$82,000	341	$30,571	$24,000	45	$47,694	$44,385	365	$41,498	$22,434	180
	MCSA: Windows Server 2016	$90,767	$72,985	22	$17,967	$14,400	3	$52,969	$42,080	28	$33,588	$16,500	13
	MCSA: Windows Server	$89,952	$84,000	627	$31,505	$24,828	70	$50,042	$45,500	591	$41,031	$21,231	290
EMC	EMC Cloud Architect (EMCCA) Specialist – Virtualized Infrastructure	$115,333	$130,000	6	$25,750	$25,750	2	$68,046	$75,000	7	$65,735	$65,735	2
	EMC Information Storage Associate (EMCISA)	$100,077	$93,000	27	$29,982	$18,600	11	$64,955	$78,500	16	$27,324	$21,000	29
	EMC Storage Administrator (EMCSA) Expert – CLARiiON Solutions	$110,244	$114,500	9	$12,000	$12,000	1	$47,500	$36,000	6	$71,500	$71,500	2
	EMC Storage Administrator (EMCSA) Specialist – Backup and Recovery – Avamar	$82,750	$83,250	4	$25,000	$25,000	2	$52,183	$46,550	3	$22,700	$23,100	3
	EMC Storage Administrator (EMCSA) Specialist – Backup and Recovery – NetWorker	$73,733	$70,000	3	$19,750	$19,750	2	$54,507	$46,550	7	$23,700	$24,000	3
	EMC Storage Administrator (EMCSA) Specialist – CLARiiON Solutions	$92,987	$94,975	8	$27,500	$27,500	1	$74,500	$85,000	6	$99,000	$99,000	2
	EMC Storage Administrator (EMCSA) Specialist – Network Attached Storage (NAS)	$79,875	$79,000	4	–	–	0	$24,750	$25,500	4	$27,300	$27,300	1
	EMC Storage Administrator (EMCSA) Specialist – Storage Area Network (SAN)	$91,333	$75,750	6	$45,000	$45,000	1	$49,789	$36,000	9	$17,067	$23,100	3
	EMC Storage Administrator (EMCSA) Specialist – Storage Management – ControlCenter	$78,000	$78,000	2	–	–	0	–	–	0	$23,100	$23,100	1
	EMC Storage Administrator (EMCSA) Specialist – Symmetrix Solutions	$96,900	$93,000	5	$27,999	$27,999	1	$80,333	$102,000	3	$11,050	$11,050	1
	EMC Storage Administrator (EMCSA) Specialist – VNX Solutions	$78,538	$86,000	4	$65,000	$65,000	1	$59,517	$40,000	11	$36,863	$25,200	4
	EMC Cloud Infrastructure and Services Associate (EMCCIS)	$113,022	$115,000	9	$19,650	$18,600	3	$58,250	$62,500	4	$32,925	$32,875	3
	EMC Data Science Associate (EMCDSA)	$190,000	$190,000	1	–	–	0	$28,477	$28,477	2	$80,000	$80,000	1
	EMC Cloud Architect Expert (EMCCAe) - IT-as-a-Service Planning and Design	$126,500	$126,500	2	–	–	0	$75,000	$75,000	1	$61,550	$61,550	2
	Other EMC Certifications	$102,185	$81,500	10	$51,433	$45,000	6	$37,353	$30,545	14	$40,748	$22,500	6

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Governance	CGEIT: Certified in the Governance of Enterprise IT	$120,956	$120,000	103	$59,505	$52,800	13	$82,234	$72,150	66	$120,659	$88,000	41
	Other Governance Certifications	$117,078	$112,500	20	$31,333	$30,000	3	$79,453	$79,000	18	$83,003	$78,850	11
Help Desk	HDI Customer Service Representative (HDI-CSR)	$76,987	$65,000	21	$12,000	$12,000	1	$36,834	$21,575	6	$7,500	$7,500	2
	HDI Desktop Support Manager (HDI-DSM)	$73,978	$74,000	26	$9,551	$9,551	2	$45,542	$25,700	6	$22,980	$17,900	5
	HDI Desktop Support Technician (HDI-DST)	$68,955	$61,921	44	$10,476	$10,476	2	$35,866	$25,000	17	$42,224	$46,000	8
	HDI Problem Management Professional (HDI-PM)	$76,494	$77,000	8	$12,000	$12,000	1	$99,250	$99,250	2	$2,500	$2,500	1
	HDI Support Center Analyst (HDI-SCA)	$63,906	$60,000	25	$24,100	$24,100	2	$20,788	$21,425	4	$42,500	$52,000	3
	HDI Support Center Director (HDI-SCD)	$72,173	$52,000	7	–	–	0	$38,200	$38,200	2	$2,500	$2,500	1
	HDI Support Center Manager (HDI-SCM)	$97,557	$100,500	12	–	–	0	$62,450	$62,450	2	$19,667	$16,500	3
	HDI Support Center Team Lead (HDI-SCTL)	$69,374	$72,578	10	–	–	0	$22,772	$26,400	3	$9,500	$9,500	2
	MCSA: WIndows 10	$79,109	$70,000	99	$16,663	$14,575	4	$43,372	$36,000	59	$28,706	$13,440	29
	MCSA: WIndows 8	$82,037	$75,000	103	$32,849	$31,000	13	$45,133	$37,500	79	$38,289	$14,650	33
	MS Spec: Windows 7	$78,321	$71,750	318	$29,496	$16,945	22	$45,876	$40,000	198	$45,009	$39,970	64
	Other Help Desk Certifications	$76,833	$70,375	18	$42,000	$42,000	1	$55,868	$52,000	11	$4,125	$4,125	1
HP	APP: HP Imaging and Printing Solutions	$82,570	$73,661	33	$25,150	$12,000	5	$40,619	$36,750	16	$17,129	$20,000	7
	AIS: ProCurve Networking	$89,356	$74,750	26	$19,750	$19,750	2	$47,758	$48,000	29	$41,189	$30,000	13
	AIS: HP Integrity Server Systems	$91,469	$82,500	19	$30,134	$32,500	10	$41,845	$36,000	23	$74,687	$23,100	21
	AIS: HP Specialty in HP StorageWorks P4000 SAN Solutions	$109,742	$100,000	11	$29,000	$29,000	2	$48,888	$48,810	18	$31,661	$20,000	11
	Other HP Certifications	$83,836	$80,080	75	$21,322	$15,250	18	$45,587	$40,393	53	$55,295	$29,991	26
IBM	IBM Certified Advanced Application Developer	$113,741	$107,500	14	$12,250	$12,250	2	$26,400	$26,400	1	$20,561	$17,000	6
	IBM Certified Advanced Database Administrator	$106,800	$105,000	10	$12,000	$12,000	1	$26,480	$35,836	3	$8,075	$8,075	2
	IBM Certified Advanced Deployment Professional	$53,333	$52,000	6	$12,000	$12,000	1	$36,974	$27,225	4	$55,283	$55,283	2

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IBM (cont.)	IBM Certified Advanced Security Professional	$95,072	$94,750	12	–	–	0	$24,445	$23,000	3	$15,926	$15,926	2
	IBM Certified Analyst	$87,828	$80,000	13	$32,500	$35,000	3	$40,800	$36,000	3	$48,876	$20,000	5
	IBM Certified Application Developer	$96,250	$98,250	6	–	–	0	$36,250	$36,250	2	–	–	0
	IBM Certified Associate Business Process Analyst	$80,000	$80,000	1	–	–	0	–	–	0	–	–	0
	IBM Certified Associate Developer	$97,325	$111,000	5	–	–	0	$36,198	$36,198	2	–	–	0
	IBM Certified Associate System Administrator	$87,539	$80,905	8	$27,500	$27,500	1	$38,945	$37,500	3	$31,784	$31,784	2
	IBM Certified Business Process Analyst	$50,000	$50,000	1	–	–	0	–	–	0	$16,500	$16,500	1
	IBM Certified Database Administrator	$104,543	$104,000	7	–	–	0	$36,207	$35,836	5	$102,000	$102,000	1
	IBM Certified Database Associate	$121,900	$112,000	5	–	–	0	$75,600	$75,600	1	–	–	0
	IBM Certified Deployment Professional	$160,000	$160,000	1	–	–	0	$18,450	$18,450	1	–	–	0
	IBM Certified Implementation Professional	$118,500	$118,500	2	–	–	0	$30,000	$30,000	2	$50,000	$50,000	1
	IBM Certified Implementation Specialist	$104,333	$98,000	3	–	–	0	–	–	0	$13,751	$13,751	1
	IBM Certified Integration Developer	$70,500	$70,500	2	–	–	0	–	–	0	$1,500	$1,500	1
	IBM Certified Operator	$60,083	$54,000	12	–	–	0	$45,000	$45,000	1	–	–	0
	IBM Certified Sales Specialist	$103,837	$101,825	6	$20,000	$20,000	2	$46,321	$34,409	13	$13,890	$15,000	3
	IBM Certified Solution Advisor	$133,000	$134,000	3	–	–	0	$50,000	$50,000	1	–	–	0
	IBM Certified Solution Designer	$88,929	$101,000	7	–	–	0	$30,000	$30,000	1	$400,400	$400,400	2
	IBM Certified Solution Developer	$88,500	$88,500	2	–	–	0	$36,000	$36,000	1	–	–	0
	IBM Certified Solution Expert	$114,375	$111,500	4	–	–	0	$34,635	$34,635	2	–	–	0
	IBM Certified Solution Implementer	$113,717	$106,150	3	–	–	0	$34,270	$34,270	1	–	–	0
	IBM Certified Solutions Specialist	$88,000	$98,000	5	–	–	0	$45,726	$34,409	3	–	–	0
	IBM Certified Specialist	$69,836	$71,000	13	$22,925	$22,925	2	$44,021	$35,918	16	$32,531	$16,500	6

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		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
IBM (cont.)	IBM Certified Storage Administrator	$88,056	$83,500	10	$45,000	$45,000	1	$46,129	$35,918	6	$35,219	$25,438	4
	IBM Certified System Administrator	$99,850	$104,750	16	$45,000	$45,000	1	$62,201	$50,000	7	$37,058	$22,528	5
	IBM Certified Systems Expert	$110,000	$125,000	3	$108,000	$108,000	1	$74,775	$74,775	2	$68,433	$78,000	3
	IBM Certified Administrator	$88,638	$85,250	8	–	–	0	$32,223	$32,223	2	$57,500	$69,500	3
	IBM Certified Advanced System Administrator	$91,700	$103,500	7	–	–	0	$28,209	$25,418	4	$100,000	$100,000	1
	Other IBM Certifications	$102,623	$104,575	30	$53,383	$42,000	5	$45,886	$47,400	17	$54,516	$18,800	19
Internet / Web	Database Design Specialist	$85,924	$81,000	37	$12,000	$12,000	1	$20,167	$16,500	4	$31,400	$40,000	3
	E-Commerce Specialist	$70,211	$75,000	9	$12,000	$12,000	1	$12,467	$13,000	3	$45,000	$45,000	2
	Internet Business Associate	$89,690	$70,449	19	$12,000	$12,000	1	–	–	0	$24,067	$18,000	3
	JavaScript Specialist	$83,667	$75,000	59	–	–	0	$53,429	$50,785	8	$49,255	$8,565	3
	Network Technology Associate	$95,141	$92,000	18	–	–	0	$16,400	$16,400	2	$50,000	$50,000	1
	Perl Specialist	$80,918	$81,000	6	–	–	0	–	–	0	$40,000	$40,000	2
	Site Development Associate	$82,533	$75,778	10	–	–	0	$41,553	$30,875	6	$50,000	$50,000	1
	Web Design Professional	$82,222	$75,000	33	–	–	0	$39,245	$38,200	8	$68,900	$67,500	3
	Web Design Specialist	$76,780	$75,000	67	–	–	0	$35,244	$15,571	5	$40,567	$50,000	3
	Web Development Professional	$89,752	$76,000	19	$29,665	$29,665	1	$34,319	$33,000	9	$70,764	$67,500	7
	Web Foundations Associate	$84,016	$80,500	50	–	–	0	$18,450	$18,450	1	$4,200	$4,200	1
	Web Security Associate	$112,470	$115,000	3	–	–	0	$15,000	$15,000	1	$16,100	$16,100	2
	Web Security Professional	$127,240	$110,000	7	$47,575	$47,575	1	$26,998	$26,998	2	$43,400	$40,000	3
	Web Security Specialist	$110,259	$90,778	6	–	–	0	–	–	0	$4,200	$4,200	1
	Adv. HTML5 and CSS3 Specialist	$73,877	$75,500	10	–	–	0	$38,778	$36,875	10	$28,067	$40,000	3
	User Interface Designer	$81,513	$76,278	6	–	–	0	$54,392	$65,000	5	$63,067	$50,000	3

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Internet / Web (cont.)	Data Analyst	$71,738	$67,673	8	–	–	0	$45,856	$26,400	3	$34,000	$34,000	2
	MCSD: Web Applications	$98,643	$94,000	62	$66,345	$40,965	6	$56,770	$50,042	48	$50,893	$32,500	25
	Other Internet Certifications	$86,302	$90,000	5	–	–	0	$45,101	$45,101	2	$68,254	$66,757	4
ITIL® / ITSM	ITIL® Expert	$101,262	$100,000	52	$30,338	$29,675	4	$82,485	$65,000	31	$62,084	$45,000	19
	ITIL® v3 Foundation	$93,638	$88,000	891	$34,187	$28,160	132	$56,581	$52,000	663	$55,945	$40,000	434
	ITIL® Service Capability: Release, Control, and Validation	$95,672	$89,550	37	$29,530	$31,000	5	$40,578	$44,000	11	$64,108	$58,000	7
	ITIL® Service Capability: Service Offerings and Agreements	$100,430	$96,000	24	$29,530	$31,000	5	$35,461	$13,250	7	$64,634	$62,750	6
	ITIL® Service Lifecycle: Service Operation	$101,776	$102,000	50	$12,000	$12,000	1	$45,836	$40,986	33	$49,073	$40,000	17
	ITIL® Service Lifecycle: Service Transition	$102,142	$106,100	33	–	–	0	$63,467	$58,250	18	$41,543	$45,000	9
	ITIL® Service Capability: Operational Support and Analysis	$90,737	$85,375	42	$40,109	$34,925	6	$55,367	$50,000	11	$41,270	$35,000	9
	ITIL® Service Lifecycle: Service Strategy	$105,953	$110,000	37	$4,440	$4,440	1	$60,278	$52,464	19	$40,521	$45,000	9
	ITIL® Service Lifecycle: Service Design	$105,529	$106,000	39	$18,250	$18,250	1	$58,323	$52,464	21	$52,804	$51,000	8
	ITIL® Service Lifecycle: Continual Service Improvement	$109,275	$106,000	37	$29,750	$29,750	2	$47,196	$51,732	16	$52,004	$52,500	6
	ITIL® Service Capability: Planning, Protection, and Optimization	$101,839	$85,000	17	$34,884	$34,850	3	$36,279	$25,000	7	$56,370	$58,000	5
	Kepner-Tregoe Foundation	$107,190	$102,250	10	–	–	0	$51,798	$47,075	6	$71,207	$67,500	3
	Other ITIL® Certifications	$90,700	$80,000	32	$41,020	$40,000	5	$61,969	$52,000	27	$45,392	$42,350	14
Juniper	Juniper Networks Certified Internet Associate - Junos (JNCIA)	$92,443	$88,000	57	$32,832	$30,000	23	$33,792	$25,788	58	$24,177	$12,600	54
	Juniper Networks Certified Internet Professional - Enterprise Routing and Switching (JNCIP-ENT)	$87,493	$80,000	13	$35,375	$36,000	4	$39,546	$30,000	13	$27,095	$12,225	14
	Juniper Networks Certified Internet Professional - Security (JNCIP-SEC)	$85,875	$87,000	8	$31,471	$32,193	4	$45,661	$47,500	12	$39,243	$26,250	6
	Juniper Networks Certified Internet Specialist - Enterprise Routing and Switching (JNCIS-ENT)	$91,211	$85,500	26	$42,048	$42,385	9	$44,192	$42,888	17	$34,019	$18,000	13
	Juniper Networks Certified Internet Specialist - Security (JNCIS-SEC)	$103,367	$92,000	10	$39,731	$43,693	6	$46,844	$30,000	14	$104,470	$14,100	10

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Juniper (cont.)	Other Juniper Certifications	$91,357	$85,500	14	$48,533	$45,000	6	$40,319	$30,000	7	$22,898	$11,700	6
	Knowledge-Centered Support Foundation	$94,534	$85,000	13	$23,500	$23,500	2	$62,167	$38,500	3	$41,311	$40,000	3
	Other Knowledge Management Certifications	$92,500	$92,500	2	$60,500	$60,500	1	$30,066	$27,833	4	$115,000	$115,000	2
Microsoft	MCSA: Linux on Azure	$90,707	$81,000	56	$23,124	$23,200	12	$50,761	$43,415	74	$44,301	$32,004	36
	MCSA: Office 365	$83,036	$75,000	106	$27,777	$14,125	18	$51,470	$49,000	84	$42,143	$42,000	51
	MCSA: SQL Server	$90,303	$83,750	188	$32,103	$23,157	27	$48,632	$45,000	125	$48,553	$30,000	57
	MCSA: Windows 10	$79,109	$70,000	99	$16,663	$14,575	4	$43,372	$36,000	59	$28,706	$13,440	29
	MCSA: Windows 8	$82,037	$75,000	103	$32,849	$31,000	13	$45,133	$37,500	79	$38,289	$14,650	33
	MCSA: Windows Server	$89,952	$84,000	627	$31,505	$24,828	70	$50,042	$45,500	591	$41,031	$21,231	290
	MCSD: Application Lifecycle Management	$111,678	$115,000	8	$73,750	$73,750	2	$68,500	$72,000	5	$49,873	$25,995	4
	MCSD: Azure Solutions Architect	$119,128	$120,000	23	$66,062	$51,000	6	$68,120	$65,778	27	$95,706	$40,000	17
	MCSD: SharePoint Applications	$92,326	$92,850	28	$20,630	$21,500	4	$43,350	$46,875	16	$47,244	$47,500	10
	MCSD: Universal Windows Platform	$95,647	$83,000	35	$30,000	$30,000	5	$62,659	$55,794	16	$40,783	$34,250	6
	MCSE: Business Intelligence	$92,502	$92,000	21	$24,083	$27,250	6	$73,232	$71,000	15	$41,625	$30,750	4
	MCSE: Communication	$95,329	$90,000	29	$23,159	$22,450	6	$47,706	$28,750	21	$40,221	$34,000	9
	MCSE: Data Platform	$105,519	$103,500	24	$24,750	$25,500	4	$63,831	$40,500	14	$52,900	$31,500	5
	MCSE: Enterprise Devices and Apps	$93,604	$81,000	29	–	–	0	$36,851	$37,250	11	$62,859	$67,350	10
	MCSE: Messaging	$98,565	$95,500	78	$47,354	$27,750	12	$49,920	$45,500	87	$56,144	$44,334	30
	MCSE: Private Cloud	$99,729	$92,000	51	$22,010	$21,500	14	$50,781	$43,500	81	$43,840	$27,300	33
	MCSE: Server Infrastructure	$94,921	$92,000	329	$30,927	$24,328	28	$54,305	$50,775	250	$61,939	$35,500	116
	MCSE: SharePoint	$95,020	$85,455	35	$17,975	$17,200	4	$47,712	$50,000	31	$50,599	$42,000	13
	MS Spec: Administering Microsoft Azure Infrastructure Solutions	$90,993	$92,040	27	$44,193	$27,500	11	$66,769	$68,550	35	$41,546	$29,904	30

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Microsoft (cont.)	MS Spec: Architecting Microsoft Azure Solutions	$95,197	$101,000	22	$69,500	$52,750	6	$66,033	$72,500	20	$79,684	$36,700	20
	MS Spec: Developing Microsoft Azure Solutions	$89,469	$89,260	22	$47,375	$52,750	4	$61,296	$40,150	13	$40,376	$27,500	8
	MS Spec: Windows 10	$72,758	$70,000	49	$14,931	$14,400	5	$46,551	$40,850	40	$34,775	$15,575	16
	MS Spec: Windows 7	$78,321	$71,750	318	$29,496	$16,945	22	$45,876	$40,000	198	$45,009	$39,970	64
	MOS Expert: MOS Expert	$82,551	$80,250	14	$21,375	$21,500	4	$42,417	$46,000	11	$64,128	$49,885	3
	MOS Master: MOS Master	$75,640	$72,880	12	$21,250	$21,250	2	$43,333	$47,333	10	$69,167	$65,000	3
	MOS: Microsoft Office Specialist	$77,248	$67,709	60	$20,625	$21,250	4	$45,483	$46,705	20	$40,088	$16,500	9
	MTA: Microsoft Technology Associate	$76,099	$68,982	150	$23,953	$19,000	21	$43,136	$42,000	63	$46,275	$34,404	34
	MCSD: Web Applications	$98,643	$94,000	62	$66,345	$40,965	6	$56,770	$50,042	48	$50,893	$32,500	25
	MCSD: Windows Store Apps	$109,438	$102,000	8	–	–	0	$43,564	$31,250	8	$48,953	$30,000	6
	MTA: Cloud Fundamentals	$100,649	$91,400	14	–	–	0	$49,940	$52,700	5	$44,277	$23,100	7
	MTA: Security Fundamentals	$85,433	$93,000	13	$14,826	$14,826	2	$37,098	$37,098	2	–	–	0
	MTA: Networking Fundamentals	$86,219	$82,980	100	$32,104	$23,803	12	$46,483	$33,000	67	$29,861	$14,489	35
Networking	Networking Fundamentals (MTA)	$86,219	$82,980	100	$32,104	$23,803	12	$46,483	$33,000	67	$29,861	$14,489	35
	Wireshark Certified Network Analyst (WCNA)	$87,902	$93,930	41	$42,909	$16,000	3	$42,864	$34,050	34	$94,382	$50,000	18
	Other Networking Certifications	$86,126	$83,800	48	$24,492	$22,277	6	$44,119	$37,000	34	$35,825	$23,250	28
	Certified Linux Desktop Administrator (CLDA)	$77,314	$80,000	7	–	–	0	$38,588	$41,320	3	–	–	0
	Novell Certified Linux Engineer (CLE)	$103,000	$110,000	3	$50,000	$50,000	1	$57,888	$75,000	3	–	–	0
	Novell Certified Linux Professional (CLP)	$106,667	$110,000	3	$16,666	$16,666	1	$60,506	$54,884	3	$32,991	$32,991	2
	Certified Novell Administrator (CNA)	$87,091	$82,500	96	$36,367	$36,367	2	$66,223	$68,155	18	$93,032	$93,000	9
	Certified Novell Engineer (CNE)	$96,660	$97,800	59	$36,367	$36,367	2	$61,905	$65,655	16	$82,385	$61,000	9

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Networking (cont.)	Certified Novell Instructor (CNI)	$111,151	$122,500	8	$33,585	$33,585	2	–	–	0	$60,000	$60,000	1
	Master Certified Novell Engineer (MCNE)	$89,221	$83,850	14	$50,000	$50,000	1	$85,875	$84,500	4	$69,409	$60,000	3
	Novell Certified Administrator (NCA)	$85,189	$70,000	14	$40,665	$40,665	1	$65,250	$75,000	4	$60,000	$60,000	1
	Novell Certified Engineer (NCE)	$68,250	$56,000	6	–	–	0	$71,103	$75,000	6	$63,750	$63,750	2
	Other Novell Certifications	$104,500	$103,500	6	$32,375	$32,375	2	$51,337	$53,000	3	$65,938	$71,199	3
Project Management	Prince2	$105,609	$96,020	18	$42,762	$24,840	3	$71,453	$68,550	143	$85,840	$57,692	59
	CompTIA Project+	$92,593	$88,000	205	$33,821	$43,000	3	$48,275	$50,000	27	$67,063	$55,500	16
	Certified ICAgile Professional	$86,352	$85,500	17	$30,869	$30,869	1	$82,121	$74,500	5	$77,350	$90,000	5
	PgMP®: Program Management Professional	$113,364	$110,000	41	$18,083	$16,750	3	$55,560	$72,500	9	$70,461	$61,250	10
	PMI-ACP®: PMI Agile Certified Practitioner	$110,073	$102,000	25	–	–	0	$35,177	$29,280	6	$76,650	$76,650	2
	PMI-RMP®: PMI Risk Management Professional	$137,500	$147,000	8	$62,000	$62,000	1	$42,750	$42,750	2	$93,910	$126,000	5
	PMI-SP®: PMI Scheduling Professional	$75,666	$54,333	4	–	–	0	–	–	0	$126,000	$126,000	1
	CAPM®: Certified Associate in Project Management	$83,568	$70,000	33	$31,000	$31,000	2	$31,707	$24,200	7	$62,290	$57,470	3
	PMP®: Project Management Professional	$105,415	$100,000	292	$46,783	$39,500	18	$53,521	$52,000	50	$77,217	$59,700	73
	PfMP®: Portfolio Management Professional	$117,375	$114,250	4	–	–	0	–	–	0	$99,003	$99,003	2
	Certified ScrumMaster	$107,258	$109,700	85	$40,844	$32,936	7	$67,799	$64,500	36	$63,326	$45,841	14
	Other Project Management Certifications	$93,424	$82,000	59	$35,031	$40,000	5	$80,390	$67,450	46	$64,928	$48,000	21
Red Hat	Red Hat Certificate of Expertise in Application Server Management	$64,842	$52,000	6	$33,000	$33,000	2	$76,665	$70,330	4	$26,160	$30,000	5
	Red Hat Certificate of Expertise in Business Process Design	$73,750	$73,750	2	$12,500	$12,500	1	$31,500	$31,500	2	$10,586	$10,586	2
	Red Hat Certificate of Expertise in Business Rules	$40,000	$40,000	1	–	–	0	$36,000	$36,000	2	–	–	0
	Red Hat Certificate of Expertise in Camel Development	$101,300	$101,300	1	–	–	0	$150,000	$150,000	1	–	–	0
	Red Hat Certificate of Expertise in Configuration Management	$73,375	$73,000	4	$27,500	$27,500	1	$48,000	$48,000	1	–	–	0

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Red Hat (cont.)	Red Hat Certificate of Expertise in Containerized Application Development	–	–	0	–	–	0	$36,500	$36,500	2	–	–	0
	Red Hat Certificate of Expertise in Data Virtualization	$83,172	$77,015	3	–	–	0	$49,968	$50,000	3	$40,000	$40,000	1
	Red Hat Certificate of Expertise in Deployment and Systems Management	$101,667	$76,000	3	–	–	0	$71,614	$81,300	4	–	–	0
	Red Hat Certificate of Expertise in Fast-Cache Application Development	–	–	0	–	–	0	–	–	0	–	–	0
	Red Hat Certificate of Expertise in High Availability Clustering	$134,000	$134,000	2	–	–	0	$39,156	$36,000	3	–	–	0
	Red Hat Certificate of Expertise in Hybrid Cloud Management	$73,150	$73,150	2	–	–	0	$42,550	$42,550	2	$28,716	$28,716	2
	Red Hat Certificate of Expertise in Hybrid Cloud Storage	$101,300	$101,300	1	–	–	0	–	–	0	$38,400	$38,400	1
	Red Hat Certificate of Expertise in Performance Tuning	–	–	0	–	–	0	$55,150	$53,500	4	$25,000	$25,000	1
	Red Hat Certificate of Expertise in Persistence	–	–	0	–	–	0	$89,105	$89,105	1	–	–	0
	Red Hat Certificate of Expertise in Platform-as-a-Service	–	–	0	–	–	0	$89,105	$89,105	1	$15,600	$15,600	1
	Red Hat Certificate of Expertise in Red Hat Enterprise Linux Diagnostics and Troubleshooting	$40,000	$40,000	1	–	–	0	–	–	0	–	–	0
	Red Hat Certificate of Expertise in Server Hardening	$118,400	$150,000	5			0	$53,500	$53,500	2	$13,769	$13,769	2
	Red Hat Certified Architect (RHCA)	$108,240	$112,000	5	$45,000	$45,000	1	$41,638	$41,800	14	$25,112	$20,400	7
	Red Hat Certified Engineer (RHCE)	$103,606	$93,000	35	$46,274	$35,000	5	$51,839	$48,574	46	$26,525	$14,179	51
	Red Hat Certified Engineer in Red Hat OpenStack	$117,267	$101,300	3	–	–	0	$50,000	$50,000	1	$14,000	$14,000	1
	Red Hat Certified JBoss Administrator (RHCJA)	–	–	0	–	–	0	–	–	0	$52,778	$52,778	2
	Red Hat Certified System Administrator (RHCSA)	$81,413	$75,000	35	$31,138	$28,525	4	$51,254	$43,170	32	$20,523	$13,839	24
	Red Hat Certified System Administrator in Red Hat OpenStack	$108,000	$108,000	1	–	–	0	$56,678	$59,824	4	$24,002	$20,400	7
	Red Hat Certified Virtualization Administrator (RHCVA)	$46,000	$46,000	1	$50,000	$50,000	1	$55,000	$55,000	1	$24,720	$26,769	4
	RHCA: Application Development	–	–	0	–	–	0	–	–	0	$15,600	$15,600	1
	RHCA: Application Platform	–	–	0	–	–	0	–	–	0	–	–	0

AREA	CERTIFICATION	U.S. & CANADA			LATIN AMERICA			EMEA			ASIA-PACIFIC		
		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Red Hat (cont.)	RHCA: Cloud	$150,000	$150,000	1	–	–	0	$75,660	$75,660	1	–	–	0
	RHCA: Datacenter	$150,000	$150,000	1	–	–	0	–	–	0	–	–	0
	RHCA: DevOps	$150,000	$150,000	1	$27,500	$27,500	1	$75,660	$75,660	1	$38,400	$38,400	1
	Linux on Azure (MCSA)	$90,707	$81,000	56	$23,124	$23,200	12	$50,761	$43,415	74	$44,301	$32,004	36
	Certified System Administrator	$83,003	$78,000	18	–	–	0	$36,357	$35,000	13	$34,625	$26,250	4
	Certified Engineer	$105,481	$115,000	5	–	–	0	$53,375	$50,000	5	$43,500	$40,000	3
	Linux Essentials	$85,442	$77,015	31	$23,617	$15,000	3	$38,697	$40,000	19	$65,415	$60,830	4
	LPIC-1	$71,535	$65,000	40	$22,289	$18,500	11	$39,786	$33,500	30	$44,603	$39,236	9
	LPIC-2	$86,625	$80,750	4	$28,545	$24,000	5	$32,136	$22,675	9	$88,951	$88,951	1
	LPIC-3	$58,250	$58,250	2	$27,363	$27,363	2	$35,000	$35,000	2	$81,317	$80,000	3
	CompTIA Linux+	$78,593	$74,331	96	$29,205	$29,350	4	$50,313	$48,359	32	$42,994	$46,573	11
	Other Linux Certifications	$96,500	$85,000	7	–	–	0	$39,230	$44,046	5	$20,000	$20,000	2
SAP	Certified Assoc. Business Foundation & Integration with SAP ERP 6.0	$95,278	$66,000	6	$20,000	$20,000	2	$113,870	$70,000	5	$25,000	$18,000	3
	Certified Application Assoc. - Financial Accounting with SAP ERP 6.0	$90,857	$90,000	7	$92,500	$92,500	2	$99,408	$73,974	6	$38,484	$40,000	3
	Certified Application Assoc. - Procurement with SAP ERP 6.0	$80,939	$71,333	8	–	–	0	$94,482	$65,000	3	$40,000	$40,000	1
	Certified Application Assoc. - SAP HANA	$131,651	$125,000	5	$1,200	$1,200	1	$135,000	$135,000	4	–	–	0
	Certified Application Assoc. - Order Fulfillment with SAP ERP 6.0	$72,617	$70,000	3	–	–	0	$220,000	$220,000	1	$52,000	$46,500	3
	Certified Technology Assoc. - SAP HANA	$96,600	$111,000	5	$200,000	$200,000	1	$105,500	$76,000	4	$150,000	$150,000	1
	Certified Application Assoc.- Business Intelligence with SAP NetWeaver 7.0	$88,642	$72,500	6	–	–	0	$156,667	$200,000	3	$41,113	$41,113	2
	Certified Application Assoc. - Human Capital Management with SAP ERP 6.0	$79,667	$62,000	3	$35,000	$35,000	1	$220,000	$220,000	1	$40,500	$40,500	2
	Certified Support Assoc. – Incident Management with SAP BusinessObjects	–	–	0	–	–	0	$220,000	$220,000	1	–	–	0
	Certified Technology Assoc. - OS/DB Migration	$75,000	$75,000	1	–	–	0	$220,000	$220,000	1	–	–	0

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		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
SAP (cont.)	Certified Application Assoc. – SAP BusinessObjects Web Intelligence	$106,465	$110,000	3	–	–	0	$108,538	$100,000	5	$30,500	$30,500	2
	Certified Application Assoc. – SAP Business One	–	–	0	$66,100	$25,000	4	$220,000	$220,000	1	–	–	0
	Certified Support Assoc. - SAP HANA	$84,222	$72,665	3	$160,000	$160,000	2	–	–	0	$20,000	$20,000	1
	Certified Technology Assoc. - System Administration (Oracle DB) with SAP NetWeaver	$93,761	$101,400	4	$120,000	$120,000	1	$36,117	$34,750	3	$71,000	$71,000	2
	Certified Application Assoc. - Sales and Distribution, ERP 6.0	$97,159	$86,728	6	–	–	0	$220,000	$220,000	1	$40,000	$40,000	2
	Certified Application Assoc. - Management Accounting with SAP ERP 6.0	$100,466	$71,008	4	–	–	0	$110,500	$75,000	3	$75,850	$40,000	3
	Other SAP Certifications	$110,519	$81,391	14	$27,950	$27,950	1	$55,883	$51,650	6	$49,723	$62,421	8
Security	Blue Coat Certified Proxy Administrator (BCCPA)	$119,375	$115,250	4	$31,000	$31,000	2	$79,087	$57,437	8	$60,217	$40,000	5
	Blue Coat Certified Proxy Professional (BCCPP)	$92,968	$108,000	7	$33,333	$38,000	3	$112,107	$110,000	5	$22,500	$22,500	1
	Check Point Certified Security Administrator (CCSA)	$103,357	$100,000	13	$37,167	$42,500	3	$54,457	$47,685	20	$118,614	$63,500	12
	Check Point Certified Security Expert (CCSE)	$89,704	$85,000	9	$35,671	$36,250	4	$77,075	$54,478	10	$191,676	$53,250	6
	CompTIA Security+	$87,673	$83,000	677	$32,314	$23,750	18	$53,490	$46,944	101	$60,210	$53,500	35
	CSFI Defensive Cyber Operations Engineer (DCOE)	$68,837	$60,000	4	$65,000	$65,000	1	–	–	0	$51,809	$51,809	1
	Certified SonicWALL System Administrator for Network Security (CCSA)	$82,461	$81,585	14	$55,958	$55,958	2	$31,500	$31,500	2	$27,333	$31,000	3
	Certified SonicWALL Security Professional (CSSP)	$122,057	$112,500	8	$99,000	$99,000	1	$71,000	$71,000	2	$100,000	$100,000	1
	Computer Hacking Forensic Investigator (CHFI) v8	$91,684	$91,000	21	$50,000	$50,000	2	$122,657	$117,220	6	$202,294	$65,000	5
	EC-Council Certified Security Analyst (ECSA) v8	$101,847	$100,000	5	–	–	0	$87,100	$70,625	8	$39,232	$26,000	10
	Certified Network Defense Architect (CNDA)	$96,125	$96,125	2	–	–	0	–	–	0	–	–	0
	Licensed Penetration Tester (LPT)	$100,000	$100,000	1	–	–	0	$62,813	$62,500	4	$34,847	$29,000	3
	EC-Council Network Security Administrator (ENSA)	$47,775	$47,775	1	$37,900	$37,900	1	$24,425	$24,425	2	$15,583	$22,500	3
	EC-Council Certified Incident Handler (ECIH)	–	–	0	$65,000	$65,000	1	$49,000	$49,000	2	$80,000	$80,000	1
	EC-Council Certified Secure Programmer (ECSP)	–	–	0	$35,000	$35,000	1	–	–	0	–	–	0

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		Mean	Median	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median	Count
Security (cont.)	EC-Council Disaster Recovery Professional (EDRP)	–	–	0	–	–	0	$25,667	$28,000	3	–	–	0
	Certified Chief Information Security Officer (CCISO)	$128,728	$137,180	9	$50,000	$42,500	3	$103,050	$100,000	5	$305,231	$58,000	3
	Certified Secure Computer User (CSCU)	–	–	0	–	–	0	$35,875	$35,875	2	$5,000	$5,000	1
	Local Traffic Manager (LTM)	$180,000	$180,000	1	–	–	0	$107,000	$110,000	3	$15,000	$15,000	1
	Global Traffic Manager (GTM)	–	–	0	–	–	0	$110,000	$110,000	1	–	–	0
	Application Security Manager (ASM)	$78,888	$78,888	2	–	–	0	$90,500	$90,500	2	$135,000	$135,000	1
	Access Policy Manager (APM)	$110,000	$110,000	1	–	–	0	$75,660	$75,660	2	–	–	0
	Certified Information Privacy Manager (CIPM)	$148,761	$140,000	9	–	–	0	$68,500	$74,000	3	$106,933	$80,000	3
	Certified Information Privacy Professional/Government (CIPP/G)	$91,145	$91,145	2	–	–	0	–	–	0	–	–	0
	Certified Information Privacy Professional/US (CIPP/US)	$116,622	$110,000	19	–	–	0	$62,000	$62,000	1	$30,800	$30,800	1
	Certified Information Privacy Professional/Europe (CIPP/E)	$121,500	$108,000	4	–	–	0	$93,688	$78,664	7	–	–	1
	Certifed Information Privacy Professional/Canada (CIPP/C)	$119,215	$103,000	6	–	–	0	–	–	0	–	–	0
	Certified Information Privacy Technologist (CIPT)	$126,919	$120,000	13	$13,445	$13,445	1	$110,248	$91,550	5	$55,400	$55,400	2
	Certified Information Systems Auditor (CISA)	$110,689	$106,067	587	$45,886	$38,000	71	$66,897	$64,750	416	$73,071	$62,750	262
	Certified Information Security Manager (CISM)	$122,448	$120,000	276	$49,453	$41,850	33	$71,534	$68,500	252	$86,285	$70,000	124
	CSX Practitioner	$98,731	$100,000	9	$65,000	$65,000	1	$135,500	$96,000	4	–	–	0
	Certified Authorization Professional (CAP)	$105,043	$115,000	7	–	–	0	$150,000	$150,000	1	$141,500	$141,500	2
	Information Systems Security Architecture Professional (CISSP-ISSAP)	$120,400	$129,750	8	–	–	0	$71,929	$62,445	5	$130,000	$130,000	2
	Information Systems Security Engineering Professional (CISSP-ISSEP)	$105,133	$95,250	6	–	–	0	–	–	0	$160,000	$160,000	1
	Information Systems Security Management Professional (CISSP-ISSMP)	$119,100	$132,500	5	$150,000	$150,000	1	$75,998	$62,445	3	$22,500	$22,500	1
	Systems Security Certified Practitioner (SSCP)	$103,910	$90,000	13	–	–	0	$42,000	$45,000	3	$89,846	$89,846	2
	Certified Secure Software Lifecycle Professional (CCFP)	$60,000	$60,000	1	–	–	0	–	–	0	$80,000	$80,000	1

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Security (cont.)	Certified Secure Software Lifecycle Professional (CSSLP)	$126,463	$131,700	8	–	–	0	$120,050	$108,000	5	$80,000	$80,000	1
	Certified Secure Software Lifecycle Professional (HCISPP)	$112,290	$116,000	7	–	–	0	–	–	0	–	–	0
	Certified Cloud Security Professional (CCSP)	$120,103	$129,015	10	–	–	0	$69,883	$65,000	3	–	–	0
	MTA: Security Fundamentals	$85,433	$93,000	13	$14,826	$14,826	2	$37,098	$37,098	2	–	–	0
	Accredited Configuration Engineer (ACE)	$85,092	$90,000	12	$40,000	$40,000	1	$61,936	$55,655	7	$52,997	$41,640	4
	Palo Alto Networks Certified Network Security Engineer (PCNSE7)	$106,720	$102,000	5	–	–	0	$50,580	$50,580	1	$224,248	$45,680	4
	Symantec Certified Professional (SCP)	$90,750	$90,750	2	–	–	0	$47,843	$44,436	4	$29,000	$29,000	1
	Symantec Certified Specialist (SCS)	$84,250	$84,250	2	–	–	0	$21,750	$22,500	3	$108,000	$108,000	1
	Certified in Risk Systems and Control (CRISC)	$127,507	$122,900	159	$61,730	$46,651	10	$82,959	$82,000	65	$79,546	$68,000	33
	GIAC Certifications	$101,797	$101,000	48	–	–	0	$57,465	$68,320	5	$74,770	$80,000	3
	ISO 27001	$99,545	$86,000	17	$38,955	$32,383	14	$60,375	$55,000	38	$55,136	$55,500	24
	Other Security or Privacy Certifications	$118,523	$116,000	61	$72,000	$56,250	6	$66,722	$56,000	39	$65,648	$46,350	27
Sun	Sun Certified Business Component Developer (SCBCD)	$110,040	$102,000	5	$12,000	$12,000	1	$13,662	$13,662	1	$64,019	$84,000	5
	Sun Certified Developer For Java Web Services (SCDJWS)	$105,000	$105,000	2	$12,000	$12,000	1	–	–	0	$85,000	$100,000	3
	Sun Certified Enterprise Architect (SCEA)	$118,450	$130,600	6	$12,000	$12,000	1	$64,500	$77,500	4	$94,333	$108,000	3
	Sun Certified Java Associate (SCJA)	$113,494	$127,500	12	$12,000	$12,000	1	$67,503	$49,375	4	$160,000	$160,000	1
	Sun Certified Java Developer (SCJD)	$107,567	$125,000	7	–	–	0	$55,630	$55,630	2	$84,446	$100,000	7
	Sun Certified Mobile Application Developer (SCMAD)	–	–	0	–	–	0	–	–	0	–	–	0
	Other Sun Certifications	$120,793	$118,500	16	$120,000	$120,000	1	$60,286	$60,000	9	$41,064	$30,000	16
VMware	VMware Certified Associate 6 – Cloud Management and Automation (VCA6-CMA)	$94,656	$86,640	26	$17,511	$12,000	5	$47,542	$41,320	21	$33,051	$20,000	17
	VMware Certified Associate 6 – Data Center Virtualization (VCA6-DCV)	$87,849	$83,000	121	$26,677	$24,000	22	$50,365	$43,000	77	$37,452	$24,000	55
	VMware Certified Associate 6 – Desktop and Mobility (VCA6-DTM)	$86,829	$75,000	29	$25,917	$27,500	5	$50,793	$38,375	18	$19,994	$10,462	12

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VMware (cont.)	VMware Certified Associate 6 – Hybrid Cloud (VCA6-HC)	$127,819	$110,000	7	$29,000	$30,000	3	$78,920	$62,000	5	$46,284	$16,500	3
	VMware Certified Associate 6 – Network Virtualization (VCA6-NV)	$93,684	$80,000	17	$19,892	$18,925	6	$41,621	$37,375	16	$12,834	$7,177	12
	VMware Certified Design Expert – Cloud (VCDX-Cloud)	$78,506	$63,000	5	$9,000	$9,000	2	$81,250	$81,250	2	$29,322	$26,000	7
	VMware Certified Design Expert – Desktop (VCDX-DT)	$87,363	$80,000	8	$24,833	$27,500	3	$45,217	$33,950	8	$20,838	$15,927	4
	VMware Certified Design Expert – Network Virtualization (VCDX-NV)	$91,000	$80,000	7	$33,400	$33,400	1	$43,944	$41,320	5	$42,433	$40,000	3
	VMware Certified Design Expert 5 – Data Center Virtualization (VCDX5-DCV)	$102,143	$103,500	7	$33,400	$33,400	1	$59,754	$50,017	12	$54,130	$30,092	7
	VMware Certified Implementation Expert — Network Virtualization (VCIX-NV)	$167,667	$180,000	3	$33,400	$33,400	1	$43,748	$38,200	6	$40,000	$40,000	1
	VMware Certified Professional – Cloud (VCP-Cloud)	$118,081	$120,500	20	$36,481	$33,400	5	$61,858	$65,000	16	$44,498	$31,235	16
	VMware Certified Professional 5 – Data Center Virtualization (VCP5-DCV)	$96,309	$90,000	159	$42,180	$36,000	15	$57,332	$53,300	139	$48,938	$37,475	83
	VMware Certified Professional 6 – Cloud Management and Automation (VCP6-CMA)	$115,333	$130,000	3	$200,000	$200,000	1	$73,382	$82,000	5	$24,735	$24,735	2
	VMware Certified Professional 6 – Data Center Virtualization (VCP6-DCV)	$99,257	$93,000	41	$41,840	$27,500	9	$53,101	$50,000	48	$42,576	$26,105	27
	VMware Certified Professional 6 – Desktop (VCP6-DT)	$122,283	$102,360	12	$48,052	$54,556	3	$49,749	$36,566	16	$46,794	$38,000	8
	VMware Certified Professional 6 – Desktop and Mobility (VCP6-DTM)	$128,945	$139,000	10	–	–	0	$82,626	$79,750	6	$10,149	$10,149	2
	VMware Certified Professional 6 – Network Virtualization (VCP6-NV)	$104,226	$92,200	11	$67,620	$39,500	5	$50,610	$56,000	9	$29,688	$27,300	9
	VMware Certified Advanced Professional 5 – Data Center Administration (VCAP5-DCA)	$90,339	$75,340	15	$24,000	$24,000	1	$63,754	$62,500	7	$56,194	$38,500	6
	VMware Certified Advanced Professional 5 – Data Center Design (VCAP5-DCD)	$135,857	$126,000	7	$24,750	$24,750	1	$70,297	$75,333	6	$25,000	$25,000	1
	VMware Certified Advanced Professional 6 — Cloud Management and Automation Design (VCAP6-CMA)	–	–	0	–	–	0	$60,000	$60,000	1	$22,500	$22,500	1
	VMware Certified Advanced Professional 6 – Data Center Virtualization Deployment (VCAP6-DCV)	–	–	0	$40,000	$40,000	1	$49,125	$49,125	2	$22,500	$22,500	1
	VMware Certified Advanced Professional 6 – Data Center Virtualization Design (VCAP6-DCV)	$96,400	$60,000	5	–	–	0	$83,225	$83,225	1	$23,385	$19,500	4
	VMware Certified Advanced Professional 6 — Desktop and Mobility Deployment (VCAP6-DTM)	$120,000	$120,000	1	–	–	0	$41,500	$41,500	1	$19,500	$19,500	2

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VMware (cont.)	VMware Certified Advanced Professional 6 — Desktop and Mobility Design (VCAP6-DTM)	$137,667	$140,000	3	–	–	0	$46,000	$41,500	3	$30,450	$30,450	2
	VMware Certified Advanced Professional 6 — Network Virtualization Deployment (VCAP6-NV)	$90,214	$90,000	7	$13,175	$13,175	2	$18,000	$18,000	1	$19,304	$16,500	5
	Other VMware Certifications	$87,332	$76,500	63	$28,089	$18,720	12	$51,606	$55,000	44	$32,963	$20,500	30
Virtualization	Virtualization Council Master Infrastructure Architect (VC-MIA)	$122,571	$123,000	7	$22,333	$12,000	3	$76,184	$34,500	6	$23,053	$16,500	7
	Virtualization Council Virtualization Infrastructure Professional (VC-VIP)	$96,833	$92,500	6	$14,375	$14,375	2	$91,509	$62,083	6	$25,763	$27,450	4
	Certified Virtualization Desktop Administrator (CVDA)	$101,968	$99,250	8	$22,125	$19,750	4	$90,102	$61,114	9	$8,150	$8,150	1
	Certified Virtualization Desktop Expert (CVDE)	$90,802	$75,325	11	$40,000	$40,000	1	$82,900	$50,000	5	$38,430	$38,430	2
	Certified Virtualization Expert (CVE)	$109,011	$119,850	18	$44,263	$41,000	4	$70,100	$70,750	10	$42,426	$27,223	6
	Certified Virtualization Security Expert (CVSE)	$105,127	$98,508	8	$40,000	$40,000	1	$48,955	$48,955	1	$40,000	$40,000	1
	MCSE: Private Cloud	$99,729	$92,000	51	$22,010	$21,500	14	$50,781	$43,500	81	$43,840	$27,300	33
	Other Virtualization Certifications	$83,354	$77,500	12	$20,367	$12,000	3	$60,466	$55,000	7	$12,456	$11,970	6
Wireless	Certified Wireless Network Administrator (CWNA)	$82,545	$73,200	48	$34,088	$30,000	9	$42,909	$38,995	35	$46,927	$40,000	21
	Certified Wireless Security Professional (CWSP)	$107,703	$90,200	17	$15,000	$15,000	2	$42,961	$36,000	9	$148,299	$60,000	9
	Certified Wireless Technology Specialist (CWTS)	$89,795	$75,000	21	$23,215	$23,225	5	$62,800	$55,000	8	$23,750	$23,750	2
	Other Wireless Certifications	$98,804	$88,275	20	$24,444	$31,785	3	$34,679	$26,250	14	$43,338	$36,250	16

SALARIES BY STATE

STATE	IT STAFF			IT DECISION-MAKERS			IT TOTAL		
	Mean	Median	Count	Mean	Median	Count	IT Mean	Median	Count
Alaska	$80,184	$83,000	13	$70,000	$70,000	2	$78,826	$83,000	15
Arizona	$86,210	$86,900	61	$107,909	$100,000	39	$94,673	$91,620	100
Arkansas	$72,761	$57,187	14	$109,567	$101,840	11	$88,955	$84,700	25
California	$92,388	$86,372	272	$127,074	$120,000	169	$105,680	$100,000	441
Colorado	$86,056	$81,000	88	$114,555	$106,450	38	$94,651	$89,500	126
Connecticut	$90,703	$84,000	30	$140,472	$134,700	25	$113,326	$106,150	55
Delaware	$73,724	$68,300	14	$125,130	$133,750	5	$87,252	$75,000	19
District of Columbia	$115,301	$106,465	20	$141,815	$142,000	13	$125,746	$132,000	33
Florida	$82,167	$80,000	197	$107,590	$102,000	99	$90,670	$87,000	296
Georgia	$83,578	$80,000	103	$112,164	$103,000	46	$92,404	$82,500	149
Hawaii	$97,192	$95,000	13	$105,000	$110,000	4	$99,029	$99,500	17
Idaho	$69,562	$65,790	18	$108,950	$103,000	6	$79,409	$78,950	24
Illinois	$83,742	$79,902	167	$113,401	$110,000	70	$92,502	$88,000	237
Indiana	$74,447	$72,500	71	$105,629	$110,000	24	$82,324	$81,000	95
Iowa	$74,224	$73,648	34	$85,199	$87,000	13	$77,259	$75,000	47
Kansas	$84,014	$79,500	24	$111,485	$102,300	13	$93,666	$92,500	37
Kentucky	$73,771	$68,313	32	$96,053	$92,200	17	$81,501	$80,000	49
Louisiana	$68,167	$63,630	15	$106,005	$95,410	12	$84,984	$87,125	27
Maine	$71,417	$62,500	15	$147,950	$150,100	6	$93,283	$78,000	21
Maryland	$91,832	$86,750	98	$126,512	$120,000	51	$103,702	$96,000	149
Massachusetts	$85,848	$79,000	50	$116,775	$111,300	35	$98,583	$96,800	85

STATE	IT STAFF			IT DECISION-MAKERS			IT TOTAL		
	Mean	Median	Count	Mean	Median	Count	IT Mean	Median	Count
Michigan	$79,428	$74,750	84	$104,964	$106,400	43	$88,074	$85,000	127
Minnesota	$84,432	$82,500	69	$109,246	$113,000	27	$91,411	$87,250	96
Mississippi	$70,938	$70,550	14	$107,029	$88,000	7	$82,968	$72,268	21
Missouri	$76,794	$74,318	72	$101,849	$94,650	32	$84,504	$83,291	104
Montana	$63,243	$63,500	6	$90,500	$100,000	3	$72,329	$70,000	9
Nebraska	$72,708	$67,000	19	$108,284	$109,150	9	$84,143	$79,000	28
Nevada	$72,391	$75,000	25	$108,750	$108,750	2	$75,085	$75,000	27
New Hampshire	$79,274	$81,500	12	$100,882	$99,250	8	$87,917	$84,875	20
New Jersey	$86,273	$80,180	86	$133,339	$122,000	47	$102,905	$95,000	133
New Mexico	$75,366	$63,555	20	$105,525	$102,400	4	$80,393	$71,500	24
New York	$85,762	$85,000	138	$125,125	$120,000	91	$101,404	$95,000	229
North Carolina	$80,926	$76,811	137	$119,643	$110,000	59	$92,581	$86,755	196
North Dakota	$75,665	$65,922	8	$83,500	$83,500	2	$77,232	$65,922	10
Ohio	$78,158	$80,000	119	$117,292	$114,200	47	$89,238	$86,125	166
Oklahoma	$71,900	$68,000	41	$102,958	$91,000	12	$78,932	$75,000	53
Oregon	$82,020	$82,500	46	$106,451	$108,500	27	$91,056	$87,500	73
Pennsylvania	$83,711	$81,810	123	$114,074	$105,000	55	$93,093	$90,000	178
Puerto Rico	$62,186	$64,575	9	$93,745	$85,000	6	$74,810	$64,575	15
Rhode Island	$80,023	$82,206	16	$157,225	$145,450	4	$95,463	$90,000	20
South Carolina	$73,890	$72,000	41	$96,762	$95,150	17	$80,593	$78,950	58
South Dakota	$59,887	$59,000	3	$83,667	$75,000	3	$71,777	$69,500	6
Tennessee	$64,708	$55,550	45	$112,128	$110,320	32	$84,415	$82,000	77

STATE	IT STAFF			IT DECISION-MAKERS			IT TOTAL		
	Mean	Median	Count	Mean	Median	Count	IT Mean	Median	Count
Texas	$82,492	$78,035	312	$115,772	$110,380	116	$91,512	$88,356	428
Utah	$72,048	$70,000	29	$118,811	$105,225	22	$92,221	$85,000	51
Vermont	$65,311	$62,425	8	$108,240	$105,000	5	$81,822	$72,000	13
Virginia	$94,595	$95,000	174	$140,671	$140,000	94	$110,756	$104,750	268
Washington	$92,352	$89,100	89	$117,523	$116,178	67	$103,163	$95,500	156
West Virginia	$62,355	$47,500	9	$103,490	$110,000	7	$80,352	$73,750	16
Wisconsin	$82,948	$81,000	75	$105,866	$102,210	23	$88,327	$85,000	98
Wyoming	$53,750	$53,750	2	$78,000	$78,000	2	$65,875	$71,750	4
Other U.S. Territories	$73,750	$73,750	2	$95,000	$95,000	1	$80,833	$85,000	3

SALARIES BY PROVINCE

PROVINCE/TERRITORY	IT STAFF			IT DECISION-MAKERS			IT TOTAL		
	Mean	Median	Count	Mean	Median	Count	IT Mean	Median	Count
British Columbia	$63,356	$60,000	195	$89,917	$81,500	64	$69,919	$65,000	259
Manitoba	$61,229	$58,591	58	$79,513	$81,000	16	$65,182	$63,385	74
Nova Scotia	$57,098	$55,630	45	$88,907	$65,000	7	$61,380	$55,738	52
Ontario	$65,230	$61,236	500	$92,345	$80,000	207	$73,169	$67,341	707
Quebec	$63,057	$60,000	150	$87,875	$81,000	80	$71,689	$65,335	230
Saskatchewan	$60,683	$59,850	46	$79,275	$78,557	8	$63,437	$60,000	54
Other Provinces	$58,016	$49,925	40	$98,312	$73,000	18	$70,522	$61,238	58