

COMPUTERWORLD  
**IT SALARY  
SURVEY**  
2017 Results

# PAYCHECKS **STAY SOLID** — FOR NOW

our survey of 2,700 tech pros shows steady pay increases.  
But with predictions for IT spending and hiring all over the map,  
salaries could be in for a wild ride.

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IT Salaries

Hold

Tight

COMPUTERWORLD  
IT-SALARY  
SURVEY  
2017 Results

Our annual survey shows moderate 3% growth in IT pay — but **salaries could be headed for a roller-coaster ride**, with wildly different forecasts from experts on IT spending, hiring and compensation. **BY STACY COLLETT**

**IF** YOU HAD ASKED Samuel Vivian about the long-term prospects for his IT career at this time last year, he would have said, “It’s kind of iffy.”





Back in the United States after four years in India, where he found IT work during the recession, Vivian, 45, landed a job as a senior technical analyst at a large food processing company in Arkansas in 2015.

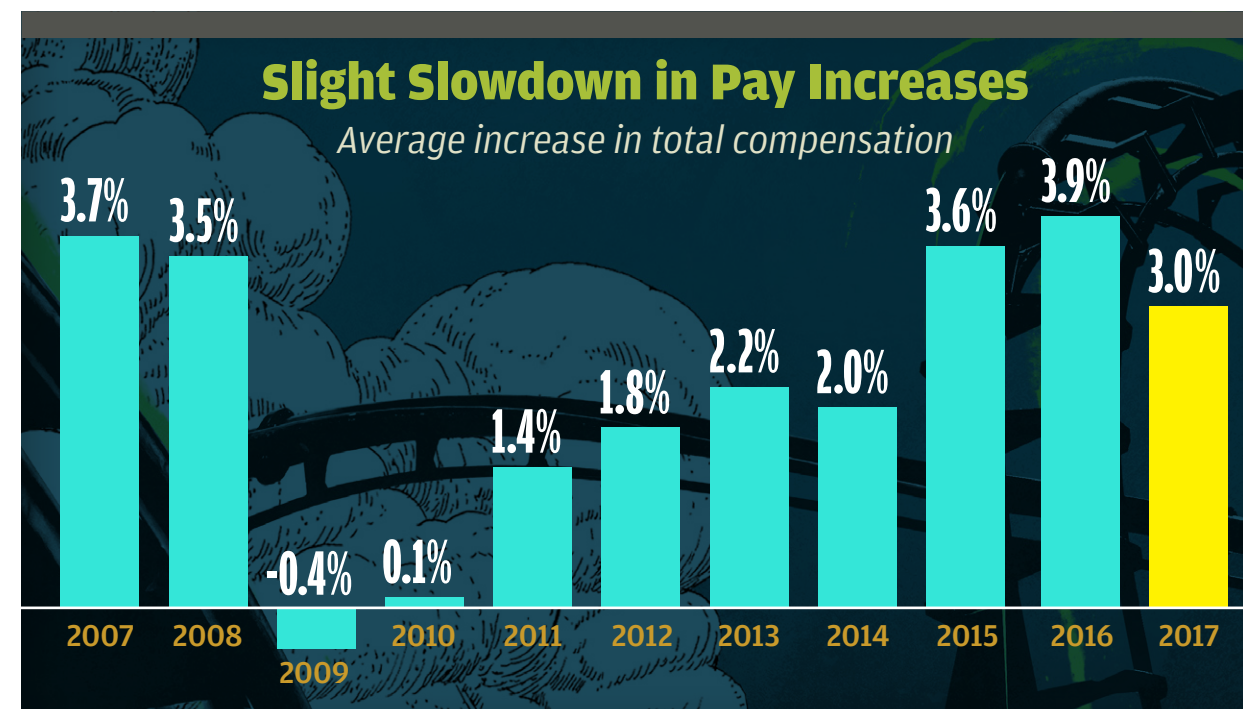
At the time, many other businesses in the region were opting for contract workers instead of full-time employees. “The message I was getting out of the job market was that nobody was confident enough to make any major investments or commit to any serious projects or hiring,” Vivian says.

Today, he has a newfound optimism buoyed by the strong pro-business stance of the new White House administration. “I think [the job market] is going to be a lot stronger this year,” he says. “Companies are suddenly talking about making billion-dollar investments in the U.S. again. They’re starting to talk about hiring large numbers of

employees again. It makes me feel a lot more confident.”

Meanwhile, in upstate New York, Corey Hart has been with the same global shipping and mailing company for five years. The 33-year-old business analyst has received small raises over the past two years and feels secure in his job, but he has noticed a troubling sign — a drop-off in the number of calls from headhunters. “I used to get two to three calls a month, but I don’t think I’ve had a call since November,” he says. “I wonder if that’s why I see a decrease in the calls — uncertainty over how things are going to go.”

When it comes to the outlook for IT salaries and jobs in 2017, it’s hard to know what to think. According *Computerworld’s* annual IT Salary Survey, average total IT compensation grew 3% this year. That’s a bit softer than the strong pay gains of 2015 and 2016, when compensation rose



3.6% and 3.9%, respectively, but certainly better than the anemic raises IT pros saw for years following the economic downturn that began in 2009.

Is the slight lag in pay raises an early indicator that a spending slowdown may be on the way, as some industry watchers have speculated? Or is it merely a speed bump, with strong IT spending, hiring and pay gains to continue next year?

## Outlook Hazy

Executives and analysts have wildly different forecasts for IT hiring and salaries going forward. Based on interviews with dozens of CIOs conducted before and after the 2016 presidential election, management consulting firm Janco Associates in December sharply raised its tech hiring forecast from 90,000 to 136,500 new domestic IT jobs to be created in 2017.

“After the election, CIOs were much more optimistic,” says Janco CEO Victor Janulaitis, pointing to the Trump administration’s promises to increase infrastructure spending, revise the tax system, bring jobs back to the U.S. and re-

vamp the H-1B visa program. If those changes are implemented, “there will be greater need for U.S.-based IT resources,” he says. Janulaitis notes that he is most encouraged by the possibility of “repatriation of dollars that are overseas, where there is

some type of tax break that corporations would get for bringing those dollars back to create jobs in the U.S.”

But other industry watchers, questioning whether such campaign promises will come to fruition, are less bullish on the new administration. Forrester Research, for instance, has lowered its 2017 IT spending forecast. After learning that many multinational corporations are taking a wait-and-see approach to spending this year, the firm revised its predicted increase in U.S. tech spending from 5.1% before the election to 4.3% post-election.

“There is tremendous uncertainty about what trade, spending and tax policies will actually take place,” says Forrester analyst Andrew Bartels. “The reality of this administration’s policies is a mass of contradictions. Maybe there will be tax cuts, but maybe it takes the

form of imposing taxes or tariffs on imports. That will be a real challenge for retailers’ and manufacturers’ supply chains. Many CEOs and CIOs are saying, ‘This could play out in any number of ways. Until it’s clear, let’s hold back on what we’re spending.’”

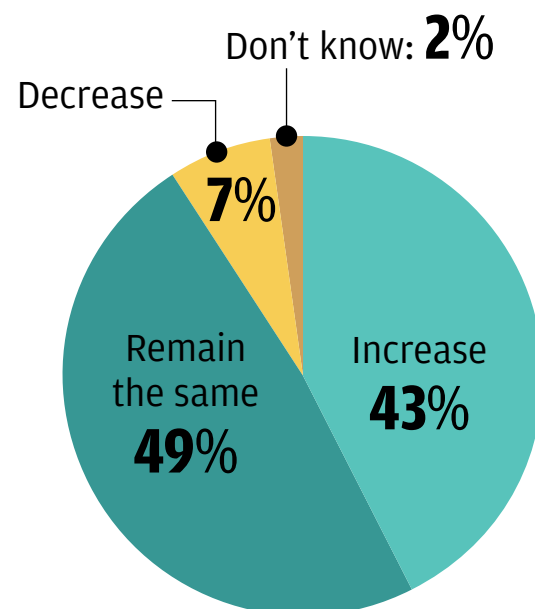
Forrester predicts that if the Trump administration continues down its current path, then the growth in tech jobs will slow down, but salaries might inch up a percentage point or two in 2017 and 2018, especially if inflation rises, Bartels says.

Computerworld’s 2017 survey shows the hiring outlook remaining steady: 43% of the 1,263 IT managers who took part in our survey expect their companies’ IT staffs to expand in 2017, while 49% said they expect head count to remain the same. Just 7% said they anticipate a decrease.

“I would say the pace or frenzy [of IT hiring] that we saw

### Tech Pros in Demand

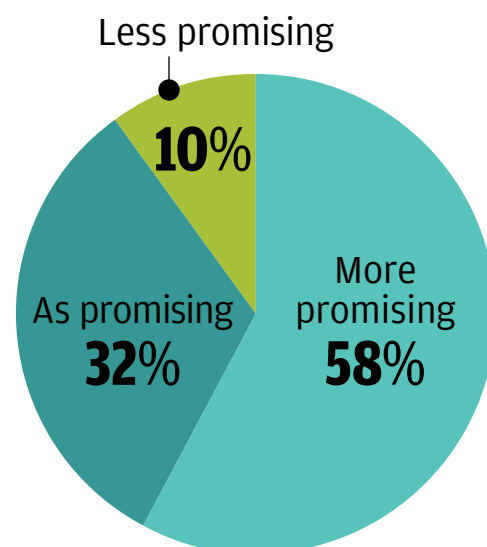
*In the next 12 months, do you expect your organization’s IT staff head count to ...*



Base: 1,263 IT managers. Percentages do not add up to 100 because of rounding.

### Road to Success?

*Compared with most other professions, do you believe an IT career path and the potential for salary advancement in IT are ...*



Base: 2,782 respondents



a couple of years ago isn't quite the same — but that's to be expected," says John Reed, senior executive director of IT staffing firm Robert Half Technology. "You have the scarcity mentality, and companies are competing for the same people, compensation is skyrocketing and people are overpaying. Then once teams are built, it becomes a more normalized picture again: 'We've got our staff now,

so we won't be adding net-new [IT employees] at the same pace, but we'll replace as we lose people.' I think that's where we are right now — but it's still incredibly competitive out there."

Salaries Are Up — a Bit

Although *Computerworld's* annual survey shows that pay raises have chugged along at or above 3% for the last three years, only 50% of our 2017

respondents reported that they are satisfied or very satisfied with their compensation, down slightly from 54% last year. Just 21% of those polled said that their salary is keeping pace with business growth and demands.

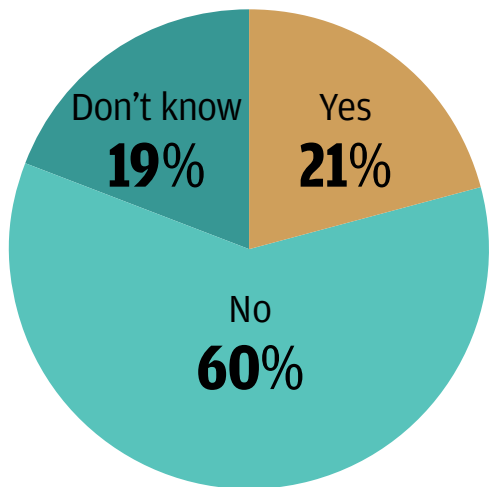
And not everyone got a raise in the past year. The percentage of respondents receiving a pay bump dropped slightly from 71% to 67%, largely due to wage stagnation rather than pay cuts: 29% reported no change in their base salary and only 4% reported a decrease in salary.

According to *Computerworld's* 2017 survey, cash bonuses increased by 2.4% on average, down from 3.2% in 2016. Of this year's 2,782 respondents, 35% said they received annual bonuses, 23% reported performance bonuses and 14% said they got profit-sharing bonuses, while 40% said they received no bonus at all.

Tom Heinlein, a technical

Feeling Underpaid

Is your salary keeping pace with business growth and demands?



Base: 2,782 respondents

architect at Walgreens Boots Alliance in Deerfield, Ill., says he received a 2.5% salary bump this year, but he and others in the IT department also earned on-the-spot performance bonuses during the year for jumping in on high-priority, high-profile projects. Spot awards can equal 10% to 20% of an IT employee's annual pay, says Heinlein, 44.

Overall Financial Picture: So-so

Over the past two years of your career, do you feel you have financially . . .

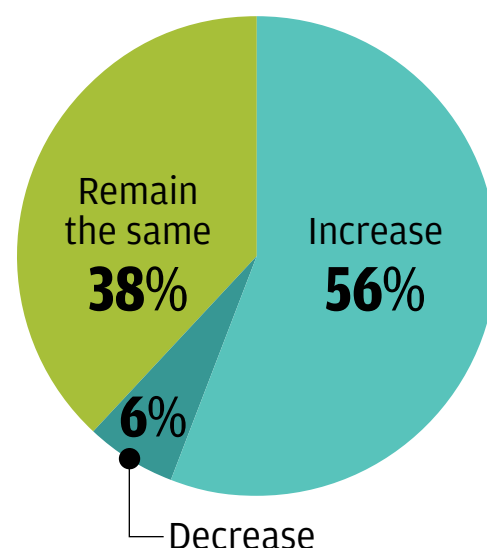
	2013	2014	2015	2016	2017
Gained ground	32%	31%	35%	41%	37%
Stayed flat	39%	39%	39%	37%	41%
Lost ground	28%	30%	26%	22%	22%
Number of respondents:	4,251	3,673	4,863	3,301	2,782

Percentages may not add up to 100 because of rounding.

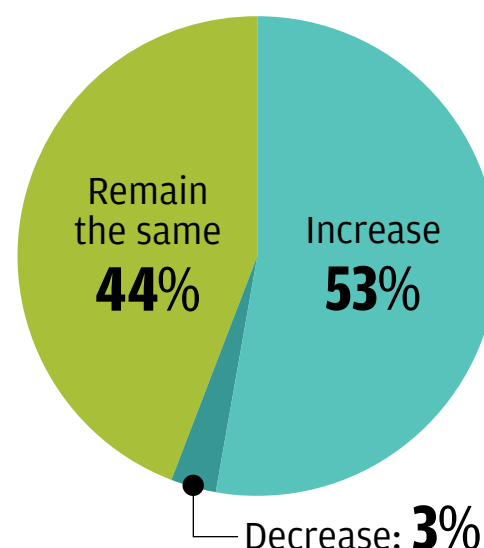


## Workloads on the Rise

Over the next 12 months do you expect your IT workload and responsibilities to ...



Over the next 12 months do you expect your line-of-business workload and responsibilities to ...



Base: 2,782 respondents

His IT peers at other companies in the Chicago area have also seen these ad hoc bonuses, as opposed to big annual salary increases, popping up in the last two years, he adds.

### Money Isn't All That Matters

Pay is just one factor keeping IT professionals at their current

jobs. Many people stay with a particular employer because of its location or mission even when they feel they're not being paid what they're worth.

For example, Kirsten, a corporate IS product services and systems operator at a large Midwest agricultural supplier, says she received a raise of about 3%

this year. She says her salary falls short for her skill level, but she believes in the company's mission of providing food to underdeveloped societies. "I can totally get behind the company's vision. If that means I get a smaller raise, I'll do that," says the 54-year-old.

*(Editor's note: Due to the sensitivity of discussing salary and hiring issues, some of the people quoted in this story asked to remain anonymous, and some asked that their employers not be named.)*

Aaron Richards, an IT coordinator at Daughters of Charity, a St. Louis-based outreach program for the poor, received a 3% raise this year. The 45-year-old has been with the nonprofit for five years and says his responsibilities have "steamrolled" from tech support to managing network infrastructure. Previously, he worked for three years as a contractor through Chickasaw Nation Industries, a federally

chartered organization that helps support the Chickasaw people.

"I'm in the nonprofit sector, so my salary is quite a bit less than other IT people," says Richards. "But within the [nonprofit] field, I'm paid well. I'm very happy where I'm at."

A 46-year-old senior engineer for a major cruise line in South Florida just received a 3% raise and an 8% bonus. The engineer, who has been with his company for 12 years, believes he's paid what his skills are worth in the region, but he's not on par with his peers nationally. "I've gotten offers nationwide that are quite a bit better, but I do enjoy living in Florida," he says. "You have to take the good with the bad, I guess."

### Job Security Concerns

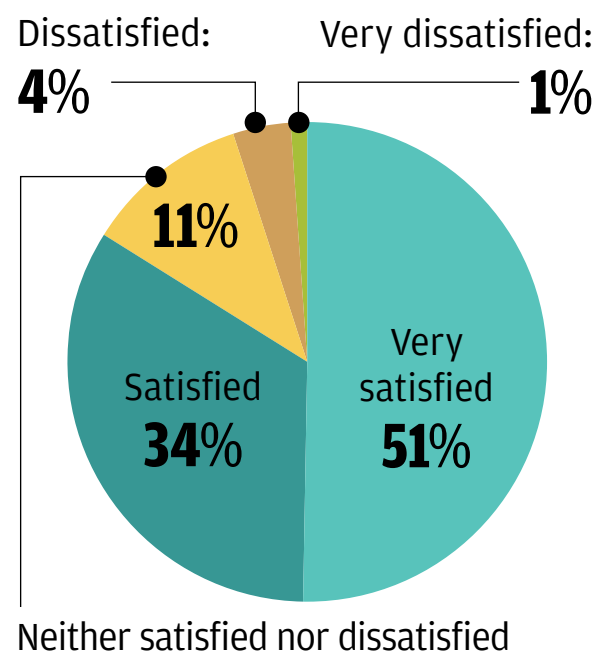
Overall, 63% of *Computerworld* survey respondents said they feel secure or very secure in



their current jobs, a figure that's virtually unchanged from last year. Those who are worried about job security say their concerns have less to do with the new administration's possible effect on IT spending than with modern business realities, such

### Glad to Be in IT

*How satisfied are you with your decision to pursue a career in IT?*



Base: 2,782 respondents. Percentages do not add up to 100 because of rounding.

as IT outsourcing and corporate mergers and acquisitions.

For instance, 30% of survey respondents named “lost jobs due to outsourcing” as among the top five challenges facing IT workers today. The cruise line senior engineer notes that one of his company’s major competitors recently outsourced a large portion of its IT work to Paris-based Capgemini. “I don’t expect any changes in my company for at least a few months because we’re going through quite a bit of transition,” he says. “But after that, who knows? It’s possible that they’ll outsource the IT department. It seems to be the industry trend.”

An IT business architect who has worked for a major airline for 22 years reports that he got a 9% raise for the second year in a row, putting his salary back on track after several lean years in the airline industry. But the company has recently gone

### Biggest Challenges

*Top 5 challenges facing IT pros today:*

Keeping up with technology advancements	48%
Undervaluing older workers	39%
Alignment of IT with the business	35%
IT talent shortage	30%
Lost jobs due to outsourcing	30%

Base: 2,782 respondents; multiple responses allowed.

through a merger, and its headquarters is now in another city. “We’re now a satellite office, so my concern is more around forced relocation or shutting down a location,” says the business architect, 45. “Is somebody

going to walk in and say, ‘This office is done?’”

### Forging Ahead With Hiring

The uncertain political and business climate isn’t curbing some companies’ hiring plans. Maritz Motivation Solutions, a provider of sales incentive, customer loyalty and similar programs, expects to add 10 full-timers to its team of 300 IT employees this year as it transforms into a consumer-facing software company with expanded platforms and business offerings, according to senior vice president of technology Bryan Phillips, 55. “Front-end Java development is a hot skill for us. Business intelligence is another one,” he says. “We’re getting very heavily into machine learning and predictive analytics.”

A senior customer relationship manager for a cloud hosting company in St. Louis says his employer plans to add full-



time system administrators, first-tier call center technicians and possibly some project managers in response to increased competition from other hosted services providers. “I’m excited about the changes [in the political climate], but those changes also bring a whole lot of un-

Sitting Tight	
Which of the following best describes your job search status?	
Not looking for a new job	45%
Passively looking for a new job at a different organization	39%
Actively looking for a new job at a different organization	10%
Seeking a new job within the same organization	5%
Base: 2,782 respondents. Percentages do not add up to 100 because of rounding.	

knowns,” says the 60-year-old, who has been with the company for nine years. “But I’m generally optimistic for the overall IT industry.”

Last fall, Robert Half Technology surveyed 2,500 CIOs about their hiring outlook for the first half of 2017. At that time, just 16% of the respondents said they planned to add more IT staffers, but 69% said that they expected to hire people to fill open IT jobs. Just 12% of those polled reported that IT hiring plans were on hold. “The hiring picture overall continues to be very positive,” says Reed.

“Companies continue to have [jobs] that chronically remain open because they can’t find the right person,” he says, adding that such vacancies are especially common in database management, desktop support, network administration and security.

Indeed, 37% of the managers who took *Computerworld’s*

Career Outlook	
Where do you expect to be in your career five years from now?	
Promoted to a higher-level position within the same company	25%
At a higher-level position within a different organization	24%
At the same job in the same organization	21%
Retired	12%
At a similar job in a different organization	12%
Self-employed	4%
In a job outside the IT profession	3%
Base: 2,782 respondents. Percentages do not add up to 100 because of rounding.	

survey reported that they have spent three to six months filling certain open IT positions, and 15% said they’ve spent more

than half a year trying to find the right person for an IT job.

Despite the demand for IT talent and the lure of higher salaries elsewhere, it seems that many IT pros are happy right where they are: 45% of the respondents to *Computerworld’s* salary survey said they aren’t looking for new jobs. And when asked where they expect to be in five years, 46% said they would likely be working for the same employer, either in the same position or a higher one.

Overall, “it seems like a lot of things have leveled out,” and the job-hopping race for bigger salaries has slowed, says Heinlein, who joined Walgreens right out of college 20 years ago. “I’ve noticed the larger companies are rewarding people who have hung around and have some experience with the company.” ♦

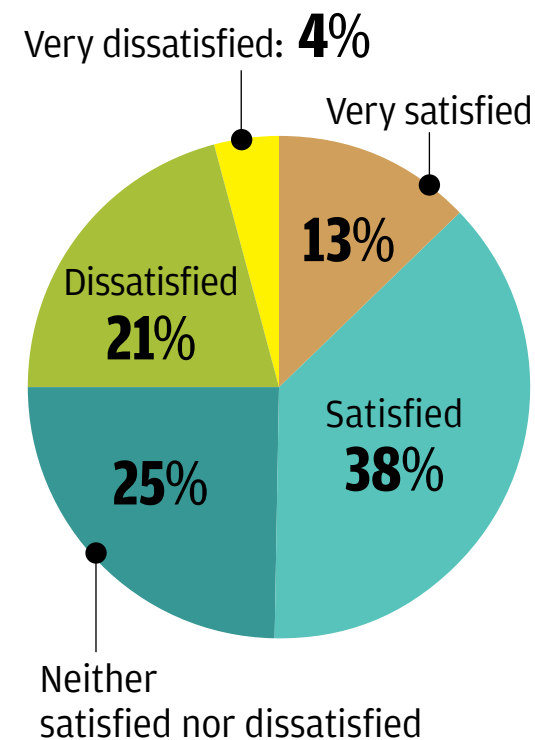
**COLLETT** is a *Computerworld* contributing writer.





# MONEY

How satisfied are you with your total compensation package?



How did you feel 12 months ago?

More satisfied	14%
Less satisfied	21%
The same	66%

Base: 2,782 respondents

[ Percentages may not add up to 100 because of rounding. ]

## SENIOR MANAGEMENT

	AVERAGE SALARY	AVERAGE BONUS	2017 TOTAL	2016 TOTAL	% CHANGE TOTAL COMP
ALL SENIOR MANAGEMENT POSITIONS	\$130,770	\$17,611	\$148,381	\$144,127	3.0%
Chief information officer	\$151,313	\$27,805	\$179,118	\$172,786	3.7%
Chief security officer	\$150,929	\$22,379	\$173,307	\$162,912	6.4%
Chief technology officer	\$120,484	\$7,797	\$128,281	\$126,375	1.5%
Director of IT	\$115,563	\$11,685	\$127,248	\$124,617	2.1%
Director/VP of systems development	\$143,294	\$19,827	\$163,121	\$157,296	3.7%
Internet technology architect/strategist	\$133,341	\$22,467	\$155,807	\$151,884	2.6%
Vice president of IT	\$155,915	\$24,568	\$180,483	\$174,844	3.2%

## MIDDLE MANAGEMENT

ALL MIDDLE MANAGEMENT POSITIONS	\$98,807	\$5,815	\$104,622	\$102,140	2.4%
Application development manager	\$118,643	\$6,756	\$125,399	\$122,492	2.4%
Computer operations manager	\$95,583	\$5,542	\$101,125	\$99,204	1.9%
Database/data warehousing manager	\$107,745	\$6,890	\$114,635	\$110,173	4.1%
Help desk/technical support manager	\$75,122	\$2,120	\$77,242	\$75,224	2.7%
Information security manager	\$112,864	\$6,211	\$119,075	\$116,238	2.4%
IT manager	\$93,497	\$5,556	\$99,053	\$96,413	2.7%

■ Highest percentage compensation change for this category

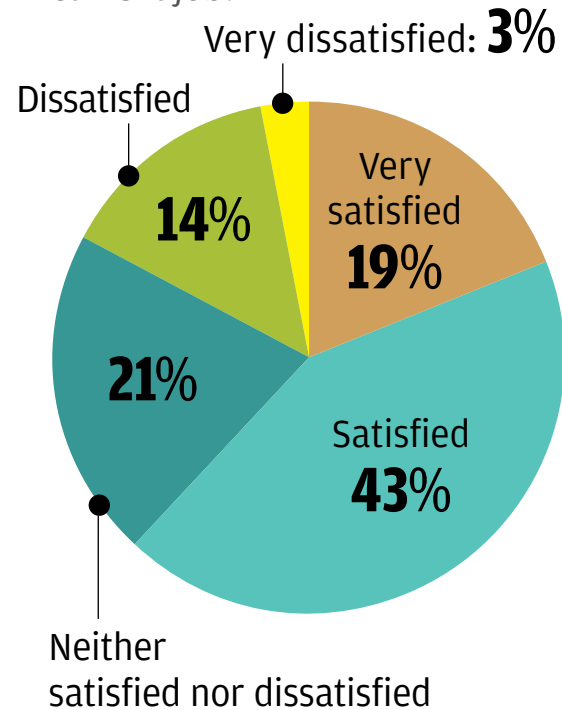
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## CURRENT JOB

How satisfied are you with your current job?



How did you feel 12 months ago?

More satisfied	20%
Less satisfied	17%
The same	60%
Not in the same position	3%

Base: 2,782 respondents

[ Percentages may not add up to 100 because of rounding. ]

Middle management positions, continued from [page 9](#)

	AVERAGE SALARY	AVERAGE BONUS	2017 TOTAL	2016 TOTAL	% CHANGE TOTAL COMP
<b>Network manager</b>	\$93,740	\$6,402	\$100,142	\$98,320	<b>1.9%</b>
<b>Product manager</b>	\$118,335	\$8,215	\$126,550	\$120,407	<b>5.1%</b>
<b>Project manager</b>	\$104,505	\$5,746	\$110,252	\$109,423	<b>0.8%</b>

## TECHNICAL STAFF

<b>ALL TECHNICAL STAFF POSITIONS</b>	\$84,277	\$3,906	\$88,183	\$85,442	<b>3.2%</b>
<b>Application developer</b>	\$93,366	\$3,769	\$97,135	\$98,237	<b>-1.1%</b>
<b>Business analyst</b>	\$87,569	\$5,424	\$92,993	\$89,472	<b>3.9%</b>
<b>Business intelligence analyst</b>	\$90,586	\$3,213	\$93,798	\$92,497	<b>1.4%</b>
<b>Database administrator</b>	\$100,587	\$4,273	\$104,860	\$101,907	<b>2.9%</b>
<b>Database developer/modeler</b>	\$90,668	\$8,567	\$99,235	\$96,771	<b>2.5%</b>
<b>Enterprise architect</b>	\$123,867	\$9,964	\$133,830	\$130,081	<b>2.9%</b>
<b>Help desk/technical support specialist</b>	\$50,275	\$1,194	\$51,469	\$48,954	<b>5.1%</b>
<b>Information security specialist</b>	\$96,383	\$3,649	\$100,032	\$97,521	<b>2.6%</b>
<b>Network administrator</b>	\$70,242	\$1,560	\$71,802	\$69,649	<b>3.1%</b>
<b>Network architect</b>	\$113,713	\$8,687	\$122,400	\$115,647	<b>5.8%</b>

■ Highest percentage compensation change for this category

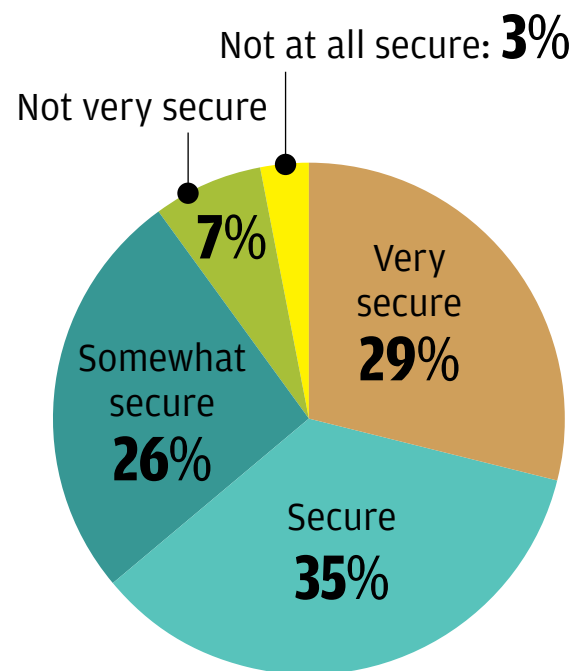
*Continued on [page 11](#)*





# SECURITY

How secure do you feel your job is?



How did you feel 12 months ago?

More secure	20%
Less secure	14%
The same	63%
Not in the same position	4%

Base: 2,782 respondents

[ Percentages may not add up to 100 because of rounding. ]

Technical staff positions, continued from page 10

	AVERAGE SALARY	AVERAGE BONUS	2017 TOTAL	2016 TOTAL	% CHANGE TOTAL COMP
<b>Network engineer</b>	\$90,508	\$5,048	\$95,556	\$92,491	<b>3.3%</b>
<b>Programmer/analyst</b>	\$86,243	\$3,611	\$89,854	\$87,146	<b>3.1%</b>
<b>Project leader</b>	\$95,925	\$5,349	\$101,274	\$97,884	<b>3.5%</b>
<b>Quality assurance specialist</b>	\$76,102	\$2,686	\$78,788	\$77,933	<b>1.1%</b>
<b>Software developer</b>	\$90,955	\$5,233	\$96,188	\$93,223	<b>3.2%</b>
<b>Software engineer</b>	\$103,456	\$4,603	\$108,059	\$103,388	<b>4.5%</b>
<b>Storage administrator/architect/engineer</b>	\$102,343	\$5,944	\$108,287	\$104,344	<b>3.8%</b>
<b>Systems administrator</b>	\$73,460	\$2,093	\$75,553	\$72,299	<b>4.5%</b>
<b>Systems analyst</b>	\$72,874	\$1,898	\$74,772	\$73,081	<b>2.3%</b>
<b>Senior systems analyst</b>	\$94,657	\$4,394	\$99,051	\$96,638	<b>2.5%</b>
<b>Systems architect</b>	\$109,934	\$7,255	\$117,190	\$112,904	<b>3.8%</b>
<b>Systems programmer</b>	\$106,899	\$4,248	\$111,147	\$108,809	<b>2.1%</b>
<b>Technician</b>	\$52,961	\$653	\$53,614	\$52,697	<b>1.7%</b>
<b>Technology/business systems analyst</b>	\$79,596	\$4,569	\$84,165	\$81,036	<b>3.9%</b>
<b>Web developer</b>	\$72,113	\$4,333	\$76,446	\$71,630	<b>6.7%</b>

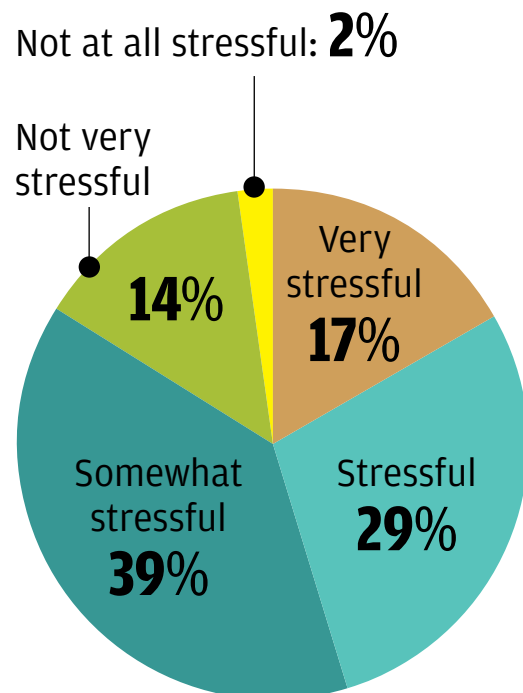
■ Highest percentage compensation change for this category





## STRESS

How stressful is your job?



How stressful was it 12 months ago?

More stressful	17%
Less stressful	18%
The same	61%
Not in the same position	3%

Base: 2,782 respondents

[ Percentages may not add up to 100 because of rounding. ]

### Career Worries

Top 5 career concerns for 2017:

Keeping skills up to date/being valuable to employer	22%
Flat/stagnant salary	17%
Finding an appropriate new position for my skill set	14%
Changing structure and role of the IT department	12%
Increased workload	10%

Base: 2,782 respondents

### Workplace Woes

Top 5 factors negatively affecting working conditions:

Increased IT workload	46%
New, understaffed projects	32%
Budget cuts	28%
Unfilled open positions	22%
Hiring freeze	16%

Base: 2,782 respondents; multiple responses allowed.

## How We Conducted the Survey

**Computerworld's 31st annual IT Salary Survey was administered via the internet.** The survey results include responses from both *Computerworld* digital magazine subscribers and visitors to Computerworld.com.

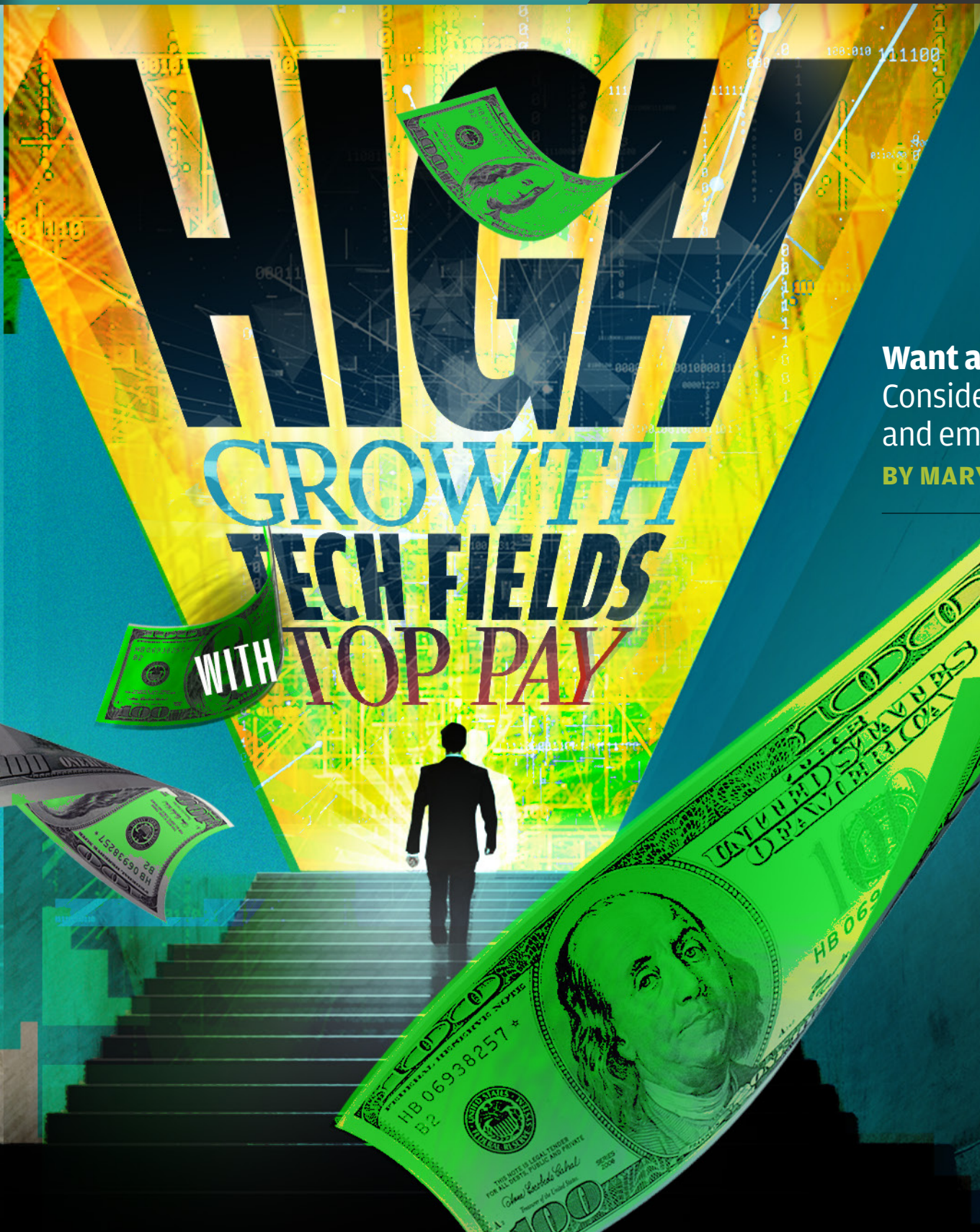
The collection of data began on Aug. 24, 2016, and concluded on Nov. 19. A total of 3,281 people responded to the survey. Of those respondents, 2,782 were employed full time or part time and were eligible to

complete the entire survey. At the 95% confidence level, the margin of error for this sample size is 1.9 percentage points.

Compensation figures for 2016 were calculated based on the percentage change reported by respondents.

You'll find a detailed look at the survey methodology, respondent demographics and much more at *Computerworld's* [IT Salary Watch](#) online.





## Want a big salary bump?

Consider these four hot IT specialties and emerging subspecialties.

BY MARY K. PRATT

**J**ACK SUNDERMAN has had a virtual “help wanted” sign out for nearly six months. Sunderman, CIO and CTO at Medac, a medical billing company in North Augusta, S.C., wants to fill an open database administrator position. He’s looking for a DBA with experience in business intelligence and reporting. The position has been open since a nearby company lured away Sunderman’s previous DBA with an offer of a 20% increase in pay.

With the unemployment rate in IT hovering in low single digits according to U.S. Department of Labor figures, IT executives say they expect to continue paying a premium for tech talent. It’s a classic supply-and-demand market dynamic. Average pay for IT pros at all levels is up 3%, according to *Computerworld’s* 2017 IT Salary Survey findings.



However, salaries aren't increasing at the same pace across the board. Enterprise demands for specific skills and a shortage of tech workers trained in certain technologies mean that some IT disciplines are seeing higher spikes in compensation than others.

Sunderman ran smack into that trend with his DBA position. Data and analytics expertise is one of four tech specialties that, along with application development, security and cloud computing, are in particularly high demand this year and are therefore among the best paying in IT.

Fortunately, those four areas represent a broad array of opportunities for IT professionals looking to advance their careers and boost their paychecks. Here's how each field is shaping up in the job market, along with a look at the hottest skills and emerging sub-specialties, as well as some interesting cross-over roles that require expertise in more than one of the four main disciplines.

Application Development

Kristina Kolbas, senior vice president of client platforms at Quicken Loans, says she and her colleagues "are always looking for great developers."

She's in good company. In *Computerworld's* survey, application development was the No. 1 most sought-after skill: 38% of the 531 managerial respondents who said they expect to hire this year reported that they were looking for developers.

Not all application developers are in equally high demand, however. Hiring managers, recruiters and IT industry analysts say organizations are hiring more mobile app developers and web developers than those focused in other areas. Kolbas, for instance, says Quicken Loans is particularly interested in mobile developers, and she points out that they can command higher salaries than other developers because many companies are putting a high priority on mobile initiatives.

According to IT staffing firm Robert Half Technology's 2017 Technology and IT Salary Guide, developer/programmer analysts can command \$83,000 to \$143,000, while mobile app developers get \$118,750 to \$182,000, and senior web developers earn \$116,000 to \$161,500.

Jairus Martin, a senior programmer analyst at contact lens maker Bausch + Lomb, says he has seen a strong demand for people with expertise in web development languages

In-Demand Skills

What types of IT skills do you expect your organization will hire for in the next 12 months?

Application development	38%
Help desk/IT support	35%
Security	28%
General IT functions in multiple areas	27%
Business analytics	22%
Network administration	19%
Cloud computing	18%
Business intelligence	16%
Networking	15%
Database analysis and development	13%

Base: 531 IT managers expecting to increase head count in the next 12 months; multiple responses allowed.

such as PHP, HTML and jQuery and database languages such as SQL.

Companies also have growing needs for developers who can do specialized work, he says. For instance, his company is hiring an



application framework developer to help design a single-source system to connect data sources, applications and reports.

Seth Robinson, senior director of technology analysis at CompTIA, a nonprofit IT trade association, also observes that there's an ongoing need for custom software, particularly mobile apps. He also points out that companies need developers who can support the increasing automation happening within IT.

In addition to specialists, programmers comfortable working with the full range of technologies needed to support a product — so-called full-stack developers — are increasingly in demand, Robinson says.

Similarly, Martin notes that companies seem willing to pay for people who can work with multiple languages and in different areas. “Normally,” he says, “if someone is a back-end developer they don’t develop front end, and vice versa. But now there’s a crossbreed or hybrid because of all the open-source technology. You can be both.”

The job market also favors people who know open-source frameworks such as Yii and who have agile development skills, both of which allow developers to respond quickly to work requests. “It’s about how



you are able to solve your company's problems," Martin explains.

Robinson also notes that developers with experience in agile development practices and IT operations requirements are in demand, because they can fill the growing need for DevOps professionals, who are particularly important for cloud computing initiatives.

According to Foote Partners, an IT research and advisory firm, the average salary for DevOps engineers ranges from about \$103,500 for someone with three years of

relevant experience to \$134,500 for a lead DevOps engineer with seven years' experience. Paul Wallenberg, unit manager of technology services at recruiting firm LaSalle Network, gives a slightly lower range of \$90,000 to \$115,000 for DevOps engineer salaries.

### Security

It's no secret that the demand for information security professionals has been sky-high in recent years, driven in part by increased corporate attention to infosec following

headline-making breaches at major companies. In the *Computerworld* Salary Survey, security was the third most sought-after skill among the managerial respondents who expect to expand their IT staffs this year.

Where demand goes, salaries follow: Security is the third highest-paying IT specialty according to *Computerworld's* 2017 survey results; it's also the specialty that saw the fourth highest boost in compensation from 2016.

According to Wallenberg, pay for lower-level security professionals averages

### Emerging Security Roles

*We asked tech leaders what new job titles were being introduced in their IT organizations. Here are the security titles they named.*



Note: The larger the type, the more common the response. Sources: Computerworld's 2017 IT Salary Survey (base: 1,263 IT managers) and our 2017 Premier 100 Technology Leaders survey (base: 100 IT executives).



\$70,000 to \$95,000 in most of the country. Security engineers command around \$130,000, security team leads get \$170,000 to \$180,000, and CISOs earn \$200,000 to \$500,000 in total compensation.

Daniel Saroff, CIO for the Boston-based Committee for Public Counsel Services, a public defender agency for the state of Massachusetts, says he has seen pay for security professionals rise nearly 40% in recent years. That makes the cost of hiring new security specialists prohibitive. “They’d be paid more than I am, literally,” he says. Therefore, he opts to use contractors for some security work while also adding in-house skills by training existing staffers in other areas of security.

The number of specialized security skills is growing fast, experts say, as is the list of the subspecialties and new titles in the field. New roles include IT security auditor, cloud security architect, security operations manager, application security architect and infrastructure security architect, says Leon DuPree, a senior security architect at Dewpoint, a Lansing, Mich.-based provider of IT services, including enterprise security optimization and staffing support.

He adds that several even newer titles are starting to emerge, such as IT security liaison, cybersecurity data scientist, vendor risk management director, business process re-engineering security consultant and security awareness trainer.

In most cases, such security specialists are making \$100,000 and up, says DuPree, who has worked at Dewpoint for the past three years and in security for more than a decade. He has collected salary figures from jobs offered by Dewpoint, colleagues in the industry, and jobs offered by other professional service organizations.

A certified IT security auditor, for example, earns \$94,000 to \$170,000 at the director level, he says. A cloud security architect earns \$102,000 to \$181,000; an application security architect, \$100,000 to \$180,000; and an infrastructure security architect, \$100,000 to \$160,000. Lower on the pay scale, DuPree says, are security awareness training personnel, who may earn on the order of \$52,000, and vendor risk management professionals, who earn \$73,000 to \$126,000. Pay varies depending on a variety of factors, including location, industry, company size and experience level.

Red-Hot Specialties

Tech functions with the highest average compensation in 2017:

Cloud computing	\$129,743
ERP	\$126,334
Security	\$123,063
Enterprise application integration	\$120,594
Application development	\$114,026
Business intelligence/analytics	\$112,268
All IT job functions	\$106,940

Base: 2,782 respondents; results shown for functions with at least 50 respondents.

Similarly, Chris Conner, director of information security at Astute Solutions, a customer service and knowledge management software provider in Columbus, Ohio, says he’s seeing a growing list of security specialties and new roles, such as vice president (or director) of compliance, director of privacy (or even chief privacy officer at the largest companies), with salaries in the mid

\$100,000s and up. Other roles include software security specialist and cloud security specialist, with pay ranging from \$120,000 to \$150,000, he says.

As subspecialties proliferate, people who hold security roles may no longer be part of traditional infosec groups, and they may not be focused solely on security, says Robinson. He also points out that security responsibilities are increasingly being embedded into

other IT positions, particularly those that focus on cloud and development, and hybrid security roles are popping up in business units as well.

### Data and Analytics

Sunderman, who oversees Medac's 30-person IT department, says he's offering annual compensation of slightly less than \$100,000 for his open data position. He

says it's hard to compete in a market where pay is on the upswing. "If you're paying someone less than that, you won't have them long," he adds.

CompTIA's Robinson says competition is stiff for data and analytics talent. For example, because the big data revolution is still relatively new, he notes, there's a dearth of well qualified people who can step into research analyst and data scientist roles.





Business analytics, business intelligence, and database analysis and development are all among the top 10 skills sought by managerial respondents to the *Computerworld* survey who said they expect to increase head count this year. These fields are also all in the top 10 when it comes to highest average compensation and highest year-over-year pay boost, according to the survey.

When asked to list job titles that are entirely new to their IT organizations, the senior and midlevel managers polled named far more roles in data and analytics than in any other discipline. New titles include chief analytics officer, chief data officer, director of business intelligence, data analytics manager, business analyst, business intelligence analyst, data analyst, data scientist and data architect. There were also several data-focused developer roles, such as BI developer and data modeler.

Dean Lythgoe, director of business intelligence at medical facilities staffing firm CHG Healthcare Services, says in the past he has hired business analysts who specifically work on BI projects, where their responsibilities include helping define report requirements. Other new roles at CHG focus

### Specialists Wanted

*If IT is hiring in your organization, are the majority of open IT positions . . .*

Highly skilled specialist positions	66%
Staff/entry-level technical positions	30%
Management positions	2%

Base: 531 IT managers expecting to increase head count in the next 12 months. Percentages don't add up to 100 because of rounding.

on administering recently purchased data tools, including Tableau and Oracle's Customer Data Management Cloud.

"Salary ranges continue to grow, and we are constantly evaluating and adjusting to remain competitive," Lythgoe says, noting that a Level 1 BI engineer earns \$65,000 to \$95,000 annually, a Level 2 BI engineer makes \$70,000 to \$107,000, and a senior BI engineer \$80,000 to \$120,000.

According to PayScale, which collects salary and benefits data, the median salary is \$92,000 for U.S. data engineers, nearly \$99,000 for analytics managers, and \$133,000 for directors of analytics.

Any role that touches data seems to be doing well these days. Perry Sticca, a business systems analyst who works for a 65,000-person company in Southern California, says he has received 10% to 20% bumps in pay when he has moved from one company to another. It's a typical hike in his profession, says Sticca, who has specialized in financial reporting systems since 1997.

Moreover, experts working as consultants in certain data-related systems, such as the financial consolidation and reporting tool Oracle Hyperion Financial Management, are in particularly high demand, Sticca says, adding that he sees people in this group taking in well over \$200,000 annually. "It's amazing how much money [you can make] when you know these specialized products," he says.

### Cloud Computing

Since cloud computing began to take off in the enterprise about a decade ago, cloud experts have commanded high pay because demand outstripped available expertise. In fact, according to *Computerworld's* 2017 salary survey, people who work in cloud computing are the best compensated among all IT professionals. And according to jobs listings

website Dice, IT pros skilled in CloudStack, OpenStack and platform-as-a-service (PaaS) tools are making around \$140,000 a year.

Expertise in cloud computing is the seventh most sought-after skill among managerial respondents to the *Computerworld* survey who plan to expand their IT staffs. As is the case with security, Robinson notes, organizations are assigning cloud tasks not only to people with cloud-specific job titles but also to IT staffers who pick up cloud duties as part of a broader portfolio of responsibilities, particularly in software development, network architecture and administration, and systems architecture and administration.

Kolbas says Quicken Loans is taking that approach when hiring systems engineers. “We look for a broader skill set, and if they have cloud capability, that’s a plus,” she says. Like many other large and midsize companies, she says, Quicken Loans is not 100% in the

cloud, so it needs people who can support both on-premises and cloud-based systems.

So what cloud skills are employers willing to pay more for? LaSalle Network’s Wallenberg lists experience in DevOps and with vendor-specific platforms such as Amazon Web Services (AWS) and Microsoft Azure

as the cloud-related skills most valued by employers. The field includes titles such as cloud engineer, cloud administrator and AWS engineer, says Wallenberg, and those roles are paying \$125,000 to \$140,000.

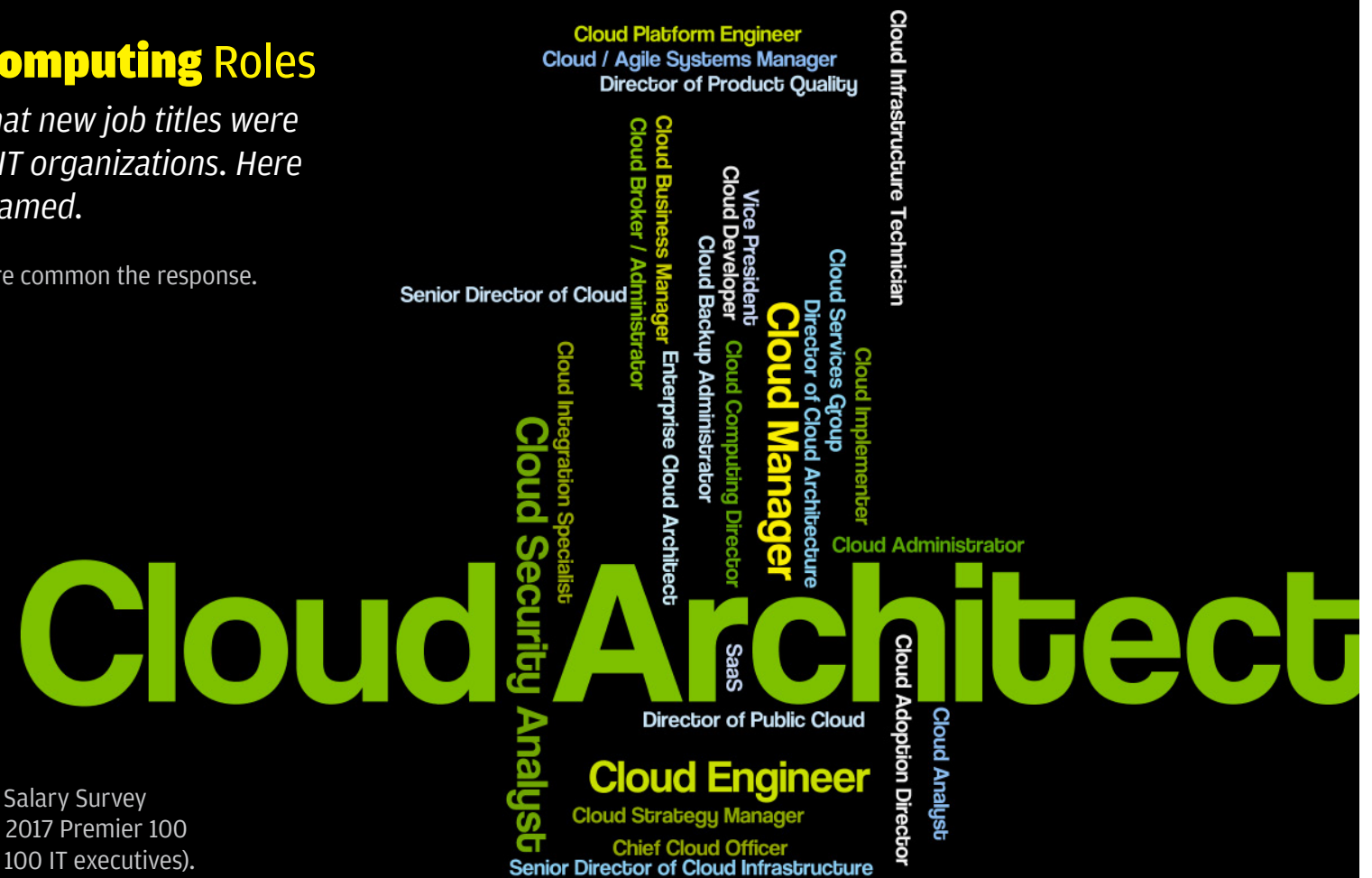
David Foote, CEO of Foote Partners, which tracks IT compensation at a granular

## Emerging Cloud Computing Roles

*We asked tech leaders what new job titles were being introduced in their IT organizations. Here are the cloud titles they named.*

Note: The larger the type, the more common the response.

Sources: Computerworld’s 2017 IT Salary Survey (base: 1,263 IT managers) and our 2017 Premier 100 Technology Leaders survey (base: 100 IT executives).





level, says premium pay has grown for dozens of cloud skills, including AWS, Citrix XenApp/Citrix Cloud, PHP, Google Cloud Platform and OpenStack, along with Java SE/Java EE, Ruby and Ruby on Rails. And IT professionals with Apache CloudStack, Rackspace Cloud, Linux and Microsoft Azure skills may be eligible for an average bump equal to 10% of their base pay, according to Foote Partners research — so if the base pay is \$100,000, those skills could earn them an extra \$10,000. Other key skills that still command a premium are capacity planning and management, configuration management and DevOps.

Rich Kourtz, who works in cloud computing as a principal engineer at Cambridge, Mass.-based BitSight Technologies, says more companies are starting to embrace the cloud for its multiple benefits, and that pushes up demand for cloud skills. Moreover, he says, cloud computing continues to evolve and mature, allowing people with expertise in the latest cloud-related technologies, such as OpenStack and containers, as well as those with DevOps experience, to command even higher premiums.

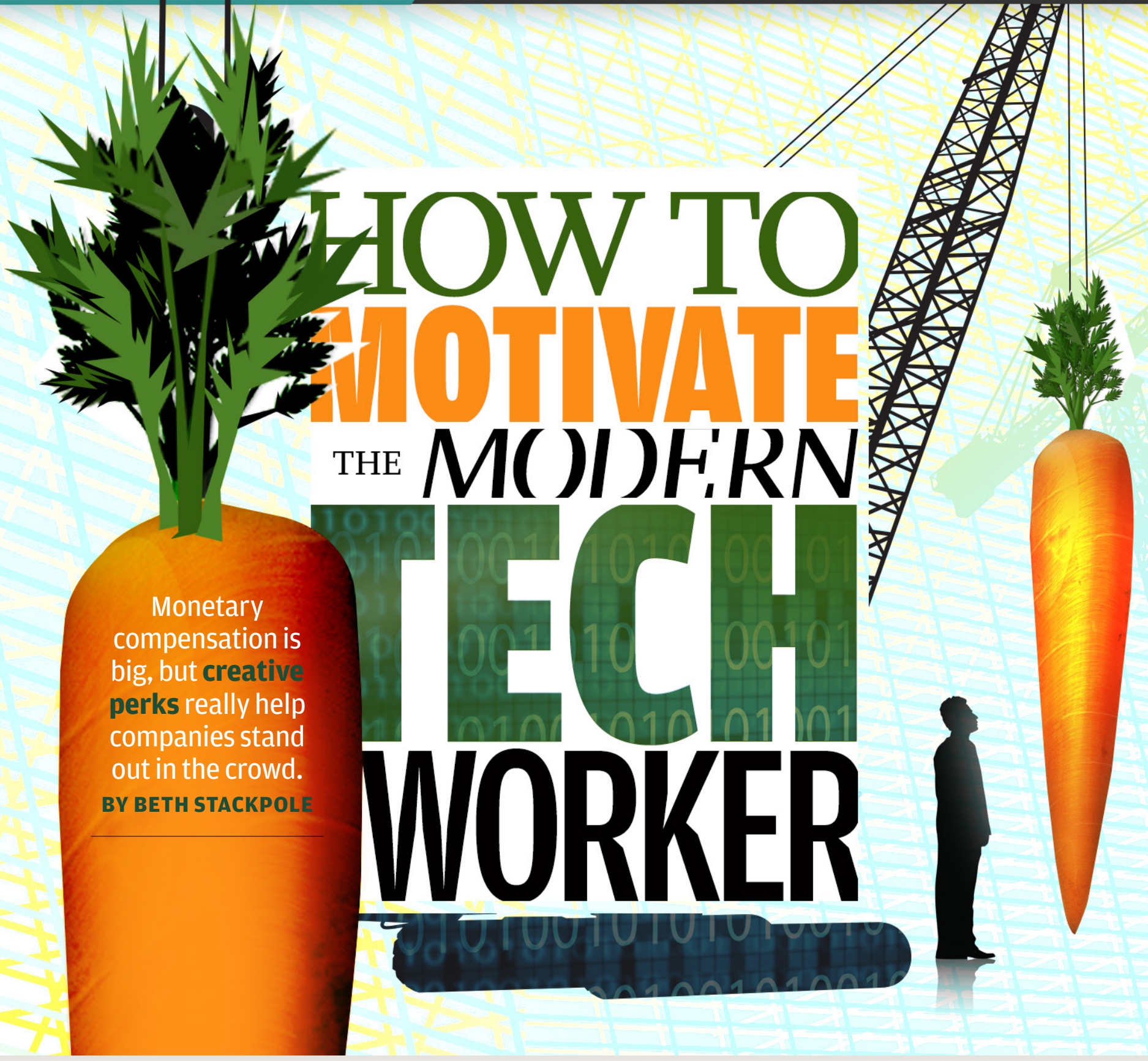
“There are so many [job] postings out there. Everyone I know gets multiple recruiters calling them a week — that drives salaries up,” he says. “You’ll be hard-pressed to find a software engineer [with cloud skills] who will complain about his or her compensation.” ♦

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# HOW TO MOTIVATE THE MODERN TECH WORKER

Monetary compensation is big, but **creative perks** really help companies stand out in the crowd.

BY BETH STACKPOLE

## AS

**A MIDWEST INSURANCE BROKERAGE**

navigating digital transformation, Ash Brokerage is committed to pulling out the stops to attract and retain the right IT talent. Because its Fort Wayne, Ind., location isn't a draw compared to other metropolitan areas, Ash offers competitive salaries in addition to bonuses.



But compensation alone isn't enough to keep a deep bench happy and engaged, says CIO David Threm.

To heighten its appeal, the 400-person company offers its 26 IT staffers flexible work schedules and opportunities to attend conferences and take part in leadership training programs. In June of 2016, Ash moved into new headquarters in downtown Fort Wayne. The firm now occupies modern offices featuring millennial-friendly perks like foosball, Ping-Pong and video game set-ups. It all plays into a corporate culture that puts an emphasis on technology and tries to prioritize individual employees' needs — themes that Threm says have bolstered IT recruitment and retention efforts.

"We try to remove a lot of barriers to people being successful," says Threm, 47, who is also an executive vice presi-

dent at Ash. "We don't want them to think about salary or how to get flexibility if there's a new baby at home. We want them to think about doing their job."

Despite rising salaries, companies are still having a hard time filling tech positions. Just over half (52%) of IT managers who responded to *Computerworld's* 2017 IT Salary Survey said it takes three months or longer to fill open positions.

Not surprisingly, in a November survey by IT staffing firm Robert Half Technology, 55% of CIOs said they were worried about employee retention over the next 12 months, and 24% said losing a highly skilled team member without notice would adversely impact the business, given the difficulty of finding a qualified replacement. That means companies like Ash need to think outside the box when it comes to attracting and retain-

Rewards and Motivators

10 rewards and perks most commonly offered by employers

Company-paid employee attendance at conferences/industry events	48%
Telecommuting options and/or flexible hours	47%
Technical, business or leadership training (in-house or reimbursed)	47%
Annual bonuses	44%
Spot bonuses or other employee reward/recognition programs	28%
Mentorship or career development programs	26%
Peer-to-peer reward/recognition programs	26%
Company-provided meals or snacks	25%
Off-site group activities (volunteer days, outings to sporting events, etc.)	24%
On-site rec room (foosball, Ping Pong, video games, etc.)	10%

Base: 1,263 IT managers; multiple responses allowed.

ing tech professionals.

The extent to which demand for IT talent outstrips supply is escalating because automakers, financial services firms and other companies in sectors that traditionally haven't been big

technology employers now find themselves in need of people with expertise in cloud computing, business analytics, security and other fields to drive digital transformation, notes Jason Hayman, research manager at

IT staffing and services provider TEKsystems. “The war for IT talent continues to rage, and the talent pool just can’t keep up with demand,” he says. “Salary and bonuses are one way to attract people . . . but it’s critical to have a variety of perks and

benefits to make [your company] stand out from the crowd.”

To be sure, monetary bonuses are still effective motivation and retention tools: 63% of IT employees participating in the *Computerworld* salary survey placed a high value on annual

bonuses, although other perks resonated nearly as well. Asked what type of benefits they prefer, 63% of respondents said they’re interested in telecommuting and flextime options, 52% cited company-paid excursions to conferences and industry events, and 49% mentioned technical, business or leadership training.

“Our folks could work elsewhere for more money, but they can see a career path here.”

TOM STAFFORD,  
CIO, HALIFAX HEALTH

### Preferred Perks

10 rewards and perks most highly valued by IT pros

Annual bonuses	63%
Telecommuting options and/or flexible hours	63%
Company-paid employee attendance at conferences/industry events	52%
Technical, business or leadership training (in-house or reimbursed)	49%
Spot bonuses or other employee reward/recognition programs	35%
Mentorship or career development programs	24%
Paid or unpaid sabbaticals	18%
Company-provided meals or snacks	17%
Off-site group activities (volunteer days, outings to sporting events, etc.)	14%
Peer-to-peer reward/recognition programs	10%

Base: 2,782 respondents; multiple responses allowed.

### Perks With a Twist

Trendsetting employers like Netflix and Facebook are serving up these traditional perks with a twist — offering employees the option of, for example, alternative work schedules, extended time off for sabbaticals or maternity/paternity leave, and reimbursement for expenses like day care and adoption fees, Hayman says.

Management-level respondents to the *Computerworld* survey said their companies mostly use more traditional tactics, the





most popular being company-paid trips to conferences and industry events (cited by 48% of those respondents), telecommuting and flexible hours (47%), technical, business and leadership training (47%) and annual bonuses (44%). Less prevalent were spot bonuses or other employee reward and recognition programs (28%), free meals and snacks (25%) and on-site rec rooms (10%).

Hayman says the key to a successful perks strategy is to map incentives to company culture, ensuring that what's offered is actually important to employees. "Not every company needs the full laundry list of

perks," he says. "Putting a Ping-Pong table in a cafeteria at an oil refinery probably doesn't make sense. Companies have to take a few steps back and think about the employee value proposition."

Culture Club

Greg Meyers, CIO of Motorola Solutions, says he's on board with the idea that retention is 80% about culture. After 50 years in suburban Schaumburg, Ill., the telecommunications equipment provider last fall moved to new digs in downtown Chicago, which makes it well positioned to attract talent, Meyers says.

Motivated by Money – and More

What matters most to you about your job?

Base pay	43%
Job stability	39%
Benefits	37%
Flexible work schedule/telecommuting	36%
Vacation time/paid time off	34%
My opinion and knowledge are valued	28%
Challenge of job/responsibilities	25%
Job atmosphere/community	24%
Potential for career advancement and development	19%
Recognition for work well done	18%
Having the resources to do my job well	18%
Skills development/education/training opportunities	18%

Base: 2,782 respondents; multiple responses allowed.



“If you have a crummy culture and you put in a pool table, you still have a crummy culture.”

GREG MEYERS, CIO, MOTOROLA SOLUTIONS

Nevertheless, he admits, Motorola still has to pay top dollar for certain competitive skills. “If there’s an area where we have no skill sets, we’ll pay a market rate for someone who brings with them a book of knowledge, but we don’t do that for a whole department,” he says. “We prefer to train and develop from within.”

Along with competitive base salaries, Motorola pays bonuses based on a percentage of salary

depending on pay grade — IT gets the same as other departments — along with equity stakes for certain positions, says Meyers, 44. Still, compensation is table stakes, he contends, adding that it’s really about creating a culture where people want to come to work. And that involves more setting up a rec room or stocking a kitchen with all-you-can-eat snacks. “If you have a crummy culture and you put in a pool table, you still have

a crummy culture,” he says.

Building camaraderie among Motorola’s 300 IT employees and keeping them engaged is key, says Meyers. To that end, he cites the company’s new collaborative office environment, flexible scheduling options and commitment to hosting creative social events like an annual miniature golf outing, carnivals and themed potluck lunches.

“People are less likely to leave a company if they connect

with people they work with and build a social life,” he says. The strategy seems to be paying off — Motorola Solutions was No. 18 among large organizations on *Computerworld’s* 2016 Best Places to Work in IT list.

It’s a smart approach for smaller organizations as well. At Welltok, for example, many of the perks offered to the 200 employees map to the mission of the company, which markets a health management platform

### Best Bonuses

*Types of monetary bonuses IT managers find most useful for IT hiring, motivation and retention*

Performance	53%
Year-end/annual	48%
Profit-sharing	25%
Certification/training completion	23%
Project completion	15%

Base: 1,263 IT managers; multiple responses allowed.

### A Bust on Bonuses?

*Types of monetary bonuses IT pros have received in the past year*

None	40%
Year-end/annual	35%
Performance	23%
Profit-sharing	14%
Project completion	3%

Base: 2,782 respondents; multiple responses allowed.



and services. (Because Welltok is a technology company, most of its employees are IT professionals, says CIO and CISO David MacLeod.)

For example, Welltok has an initiative called Café Well through which it provides a series of wellness programs, including free health assessments and screenings, companywide competitions like a daily step-count challenge, and even ice time at a skating rink located just outside of the company’s downtown Denver headquarters, says MacLeod. Another popular perk is Welltok’s own suite of health management tools, which may periodically remind employees to drink more water or stroll around the office to increase their step counts.

The company’s no-cubicle workspace design and comfortable seating areas are also a hit among the millennials who comprise a big part of Welltok’s

workforce, says MacLeod, 56. There’s an abundance of free granola, yogurt, cheese and other snacks, along with easily accessible “huddle rooms” to encourage collaboration.

“They want to be able to collaborate, and they don’t like the idea of assigned rooms,” MacLeod says. “We’d rather they come into the break room, have a snack and collaborate than go to Starbucks.”

### Train (and Promote) to Retain

At Halifax Health, paying big salaries and bonuses isn’t easy, but the nonprofit healthcare provider is able to retain IT employees because it emphasizes professional development, says vice president and CIO Tom Stafford. With 4,300 total employees, Halifax was ranked No. 2 among midsize employers on *Computerworld’s* 2016 Best Places to Work in IT

### Reasons to Stay

*Why aren’t you looking for a new job?*

Satisfied with current job responsibilities	60%
Satisfied with organization’s culture	44%
Satisfied with current compensation	37%
Job market is poor/few opportunities	15%
Other	21%

Base: 1,263 respondents who said they’re not looking for a job; multiple responses allowed.

### Reasons to Jump Ship

*Which factors would most influence you to change your job?*

Salary increase	73%
Better work/life balance	36%
Job security	32%
Large sign-on bonus	30%
Access to new technology projects	28%
More vacation time	28%
Organizational stability	27%
More training	22%
More responsibility	18%
New title	13%

Base: 2,782 respondents; multiple responses allowed.

list, up from No. 10 in 2015.

Halifax was recognized for its training and career development benefits, including a mentoring program, as well as perks like free fitness club memberships, wellness classes, and a weekly healthy food marketplace. Of the 100 large, mid-size and small organizations on the 2016 Best Places list, Halifax placed second overall for career development, sixth for training and, not coincidentally, fifth for employee retention. (Its turnover rate in IT is 6.5%, according to Stafford.)

In addition to those benefits, the company emphasizes a promote-from-within culture to prevent churn among its 57 IT staffers, says Stafford, 47. “We retain employees because they see a future at Halifax,” he says. “There are examples of it all around them — the web developer who used to be on the service desk or the

team lead that’s now a project manager. Our folks could work elsewhere for more money, but they can see a career path here at Halifax.”

### Flexibility, Recognition and Teamwork Count

For Joe Stephenson, 36, an infrastructure engineer in the Carlsbad Police Department in California, money is important, but not the primary motivator for sticking around. There are limits to pay raises and bonuses when you work for a government entity and are part of a union, as Stephenson is, but he says he’s OK with that as long as there are benefits that help him create a better work/life balance.

For example, his IT department’s flextime options let employees choose between working long hours Monday through Thursday with Fridays off, or working shorter hours five days a week. Stephenson

opts for the latter schedule so he can take his kids to school each morning instead of hiring a babysitter. He also is able to come in late to accommodate special occasions — most recently, to see his daughter get an award.

“My manager takes into consideration the fact that I have a family, and those things are as important to her as they are to me,” Stephenson says. “The culture here is that our lives are about more than just our jobs.”

Sonja Reitter, 33, a global technology infrastructure specialist, says she draws a lot of motivation for her job from an employee recognition program offered by her employer, Sutherland Global Services. The Rochester, N.Y.-based company’s Extra Mile program allows people to

recognize peers for specific accomplishments in a Facebook forum; each citation accrues points and eventually financial rewards. Over the last three years, Reitter has received 377



**“We’d rather [our workers] come into the break room, have a snack and collaborate than go to Starbucks.”**

DAVID MACLEOD, CIO AND CISO, WELLTOK





recognitions from her peers, resulting in three \$500 gift cards. She says the points paid for Christmas presents last year — a bonus for her entire family. But more importantly for Reitter, she is the fifth most cited person in the program, out of a global workforce of 50,000

employees. “It makes me feel like I really made a difference,” she says.

At Ash Brokerage, software architect Phillip Bercot says the compensation packages, flexible work arrangements and perks are great, but it’s having an IT leader and set of colleagues who have your back that really keeps people around. “I started with this group

of people as an intern not knowing anything, and we evolved into a team,” says Bercot, 29, who has been at Ash for five years and worked with CIO Threm at a previous company. “It’s something I don’t consider abandoning because it’s like family.” ♦

**STACKPOLE** is a Computerworld contributing writer.

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