THE LINUX FOUNDATION

Dice

The 2018 Open Source Jobs Report

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Open source continues its long stretch of popularity, becoming the software of choice for businesses large and small.

It's no wonder: Open source cuts development costs and time to market, and accelerates innovation and developer productivity.

Open source has become pervasive even in proprietary software. One **recent audit** of 1,000 commonly used applications in the enterprise found open source components in 96%, and open source made up 57% of proprietary codebases.

And it's creating an ongoing abundance of jobs and fierce competition for professionals with these skills.

The results of the 2018 Open Source Jobs Report, an annual partnership with career site **Dice** and **The Linux Foundation**, highlights this booming job market and the burgeoning opportunities for IT pros.

This year's survey includes responses from more than 750 hiring managers at corporations, small and medium businesses (SMBs), government agencies and staffing firms worldwide, plus more than 6,500 open source professionals.

Key Findings:

- Hiring open source talent is a priority for 83% of hiring managers, an increase from 76% in 2017.

- Linux is back on top as the most in-demand open source skill category, making it required knowledge for most entry-level open source careers. This isn't surprising considering the strong popularity of cloud and container technologies, as well as DevOps practices, all of which typically run on Linux.

- There's a gulf between the views of hiring managers and IT pros on the effectiveness of efforts to improve diversity in the industry.

- Containers are rapidly growing in popularity and importance, with 57% of hiring managers seeking that expertise, up from only 27% last year.

- Hiring managers are moving away from hiring outside consultants, increasingly opting to train existing employees on new open source technologies and help them gain certifications.

- Many organizations are getting involved in open source with the express purpose of attracting developers.

Hiring can be difficult; open source pros have a wealth of opportunities to tempt them.

87% of hiring managers experience **difficulties recruiting** enough open source talent

55% of open source professionals say it would be **easy to find a new job**

87% of open source professionals say knowing open source has **advanced their career**

Fifty-two percent of hiring managers say they will hire more open source professionals in the next six months than they did in the previous six months. And 60% say hiring of open source professionals will increase more than hiring for other areas of the business. That's down a bit from last year when 58% projected more hiring in six months and 67% foresaw more open source hiring than other areas of the business.

Yet, reflecting a strengthening global economy, 50% of hiring managers in 2018 report the economy is encouraging them to hire more, an increase from 43% last year. Only 6% reported that the economy is leading them to reduce open source hiring.

Finding the right mix of experience and skills is difficult for 87% of hiring managers, very similar to the 89% who said so last year and 87% in 2016. That includes the 44% who rated it very difficult, a percentage that leaped from 34% in 2017.

The overall **unemployment rate** for tech professionals hit 1.9% in April, down from 3% a year ago, providing evidence of those claims.

The fierce competition for talent has many companies paying premiums above base salary, especially in areas such as cybersecurity, big data and process management.

And the market value of DevOps skills grew by an average 7.1% during the past six months, according to analyst firm **Foote Partners**.

Meanwhile, 55% of open source pros say it would be easy to find a new open source job, up slightly from 52% in 2017 and 50% in 2016.

Demand remains steady for open source professionals, with only 19% reporting they have not received a recruitment call in the previous six months. This is a significant drop from the 27% who reported not receiving a recruiting call in the 2016 and 2017 surveys.

Not surprisingly, 87% of open source professionals believe knowing open source has advanced their career, largely unchanged from the 86% who said this in 2016 and 2017.

And companies are realizing that supporting open source projects can be a valuable recruiting and retention tool. This year, 57% of hiring managers reported that their organization contributes to open source projects, up from 50% in 2017.

Nearly half (48%) of hiring managers report that their organization has decided to financially support or contribute code to an open source project for the specific goal of recruiting developers who work on that project.

Hiring managers believe their diversity efforts are more effective than employees do.

This year, the survey included optional questions about companies' initiatives to increase diversity in open source hiring, a hot topic throughout the tech industry. It found a gap in perceived effectiveness between managers and workers.

The different values among male and female tech workers, as highlighted in the **Dice Ideal Employer** survey, could play into this.

While 79% of hiring managers report that their organizations proactively encourage diversity in hiring efforts, only 60% of employees stated they are aware of diversity efforts in their workplace.

Seventy percent of hiring managers rated their organization's diversity efforts as excellent or good, but only 52% of professionals agree. Sixteen percent of professionals rate these efforts at their organization as poor or extremely poor, compared to only 8% of hiring managers.

However, respondents who said their company does engage in diversity efforts were more closely aligned. Those efforts include support for initiatives such as Women Who Code or Blacks in Technology (56% hiring managers vs. 51% professionals), actively recruiting underrepresented individuals (46% hiring managers vs. 45% professionals), offering diversity training (37% managers vs. 40% professionals) and sponsoring diversity groups within the company (31% managers vs. 30% professionals).

70% of hiring managers rate **their diversity efforts** as good

52% of open source professionals rate their **employers' diversity efforts** as good

79% of hiring managers **proactively seek diversity** in recruitment

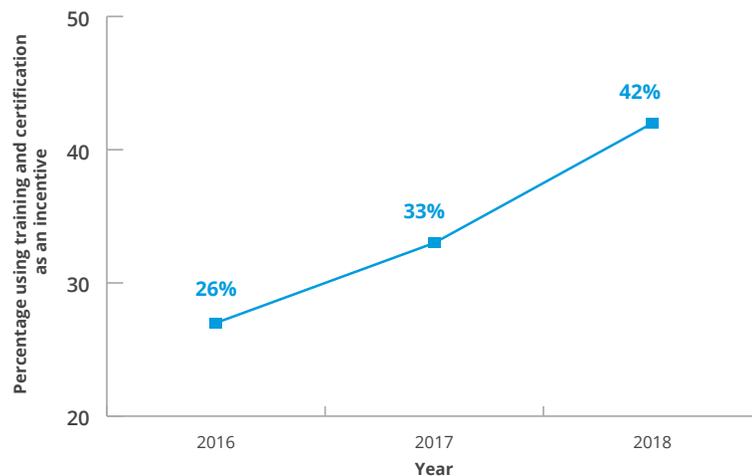# Training and certification continue to grow in importance.

Employers are increasingly willing to train their staff members and help get them certified.

Forty-two percent of employers report they have trained existing workers on new open source technologies to meet new needs in 2018 as opposed to only 30% in 2017. They are less likely (38%) to rely on outside consultants, compared with 47% in 2017.

Employers increasingly use **training and certification as an incentive** to retain employees.

In order to keep up in a fast-changing landscape, employees continue to seek out training. 64% of hiring managers say their employees are requesting or taking training courses on their own, an identical percentage to 2017.

Employers are using training and certification opportunities as an incentive to retain employees, with 42% reporting doing so, up from 33% last year and 26% in 2016.

Nearly half (47%) of hiring managers say employing certified open source professionals is a priority for them, essentially the same as last year. The same percentage say they are more likely to hire a certified professional than one without a certification.

An increasing number of companies are willing to pay for certifications, with 55% who reported having helped to cover the costs of certifications this year, up from 47% last year and 34% in 2016. Only 17% say they definitely would not pay for certifications, down from 21% last year and 30% in 2016. This benefit can be used as a recruiting tool, and employers who offer certifying full-time employees should mention it in job postings. Similarly, professionals seeking this benefit should make clear during the interview process their desire to continue education and become certified while employed.

Chart — x-axis: Year (2016, 2017, 2018); y-axis: Percentage using training and certification as an incentive (20–50). Data points: 2016: 26%, 2017: 33%, 2018: 42%.

The debate over the merit of certifications vs. on-the-job experience continues today. While many seasoned tech professionals claim years of experience is more important, the average certification now represents a 7.6% premium on an IT pro's base salary, according to **Foote Partners**.

A vast majority (80%) of open source professionals say certifications are useful to their careers, up slightly from 76% in the previous two years. The main reasons are that certifications enable employees to demonstrate technical knowledge to potential employers (reported by 45% of respondents), and certifications make professionals more employable in general (33%). Forty-seven percent of open source professionals plan to take at least one certification exam this year, up from 40% in 2017.

Employers increasingly seek vendor neutrality in their training providers, with 77% of hiring managers rating this as important, up from 68% last year and 63% in 2016.
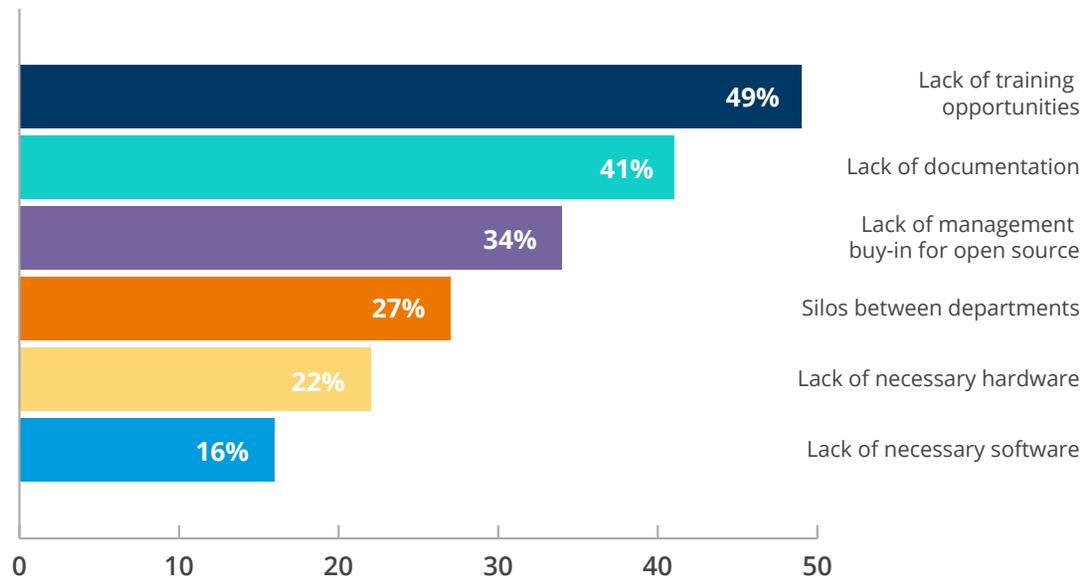
Almost all types of training have increased this year, with online/virtual courses being the most popular. Sixty-six percent of employers report providing this benefit, compared to 63% in 2017 and 49% in 2016. Forty percent of hiring managers report providing onsite training, up from 39% last year and 31% in 2016; and 49% provide individual training courses, the same as last year.

Additionally, employers increasingly see benefit from sending employees to conferences. Fifty-six percent of hiring managers said they pay for employees to attend technical conferences, up from 46% in 2017.

Smart companies can address challenges of hiring developers.

Biggest challenges for open source developers

Challenge	Percentage
Lack of training opportunities	49%
Lack of documentation	41%
Lack of management buy-in for open source	34%
Silos between departments	27%
Lack of necessary hardware	22%
Lack of necessary software	16%

Developers are the most sought-after position, with 72% of hiring managers looking for them, followed by DevOps skills (sought by 59%), engineers (57%) and sysadmins (49%).

Respondents who listed developer as their primary job role were asked about its challenges and opportunities. In their view, providing opportunities to attend conferences and events (cited by 68%) is the top way employers can make developers more successful, as well as allocating paid work time to contribute to open source projects (62%) and providing professional training opportunities (also 62%).

Fifty-two percent would also like their employer to establish clear policies and procedures for using and contributing to open source, something The Linux Foundation's **TODO Group** has been spearheading through the development of **Open Source Guides for the Enterprise**.

Open source professionals cited the lack of training opportunities as their primary challenge (49%), but also pointed to a lack of documentation for open source projects (41%), and difficulties in obtaining management buy-in for open source (34%).

Meanwhile, the number of hiring managers seeking Linux talent (80%) rebounded from a dip in 2017 (65%), to reclaim the top category for 2018, even surpassing the 71% mark in 2016. Cloud technology experts are the second most in demand at 64%, a drop from last year's 70%. Security and web technologies come in next, both at 49%, followed by networking at 46% and containers at 44%.

Cloud/virtualization is the most sought after open source skill, sought by 66% of hiring managers, up from 60% in 2017. Skills with containers, one of the latest hot technologies, took a sizeable jump to second place at 57%, compared with 27% last year. Security is third, sought by 49% of hiring managers, followed by networking (47%) and cloud native computing (39%).

Additionally, 34% of hiring managers are looking for professionals who have knowledge of open source licensing and compliance issues, up from 29% last year.

Open source pros rank DevOps skills as most in demand at 46%, followed by cloud (44%), application

Hiring managers are **looking to recruit** in the following areas:

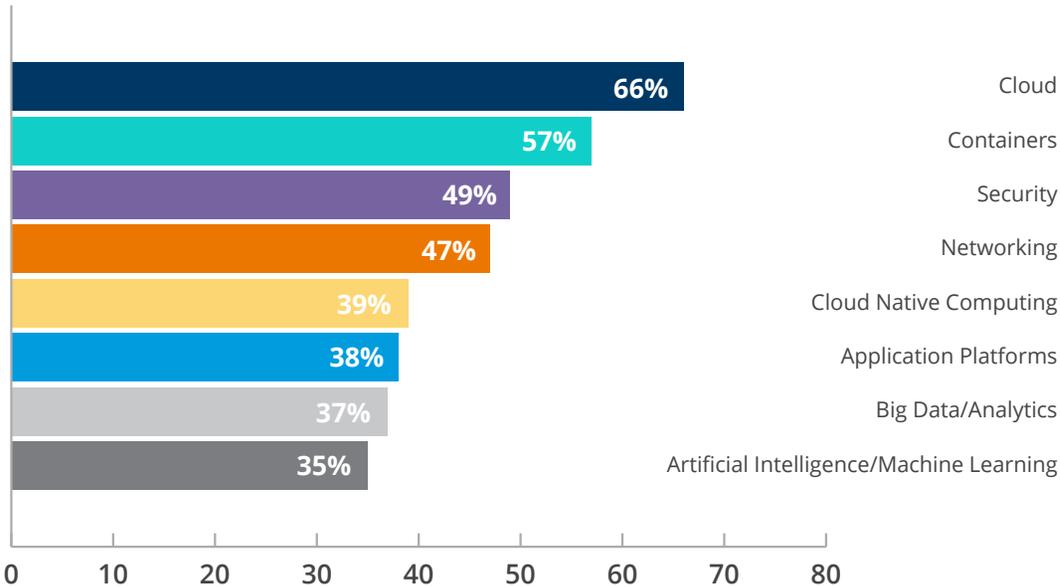| Category	%
Linux	80%
Cloud	64%
Security	49%
Web Technologies	49%
Networking	46%
Containers	44%

development (41%), systems administration (40%), and big data (39%).

For the first time, open source professionals ranked containers as the biggest growth area this year at 62%. Cloud, which held the top spot in 2017 at 69%, fell to 57% this year. They also pointed to growth in big data and analytics at 49% (57% in 2017), artificial intelligence and machine learning at 48% (new for 2018) and security at 43% (55% in 2017).

Hiring managers cited cloud (66%) as the technology most affecting their hiring decisions, up from 62% last year. Containers placed second at 57%, followed by security (49%) and networking (47%).

Companies are taking container technologies seriously. In 2018, 41% percent of open source professionals reported they work with these technologies, up from 36% in 2017 and 27% in 2016.

Technologies most **affecting hiring decisions:**

Technology	Percentage
Cloud	66%
Containers	57%
Security	49%
Networking	47%
Cloud Native Computing	39%
Application Platforms	38%
Big Data/Analytics	37%
Artificial Intelligence/Machine Learning	35%

Cash is still king, but other incentives work, too.

While open source professionals with the most specialized and rarest skills can often write their own checks in terms of salary, companies are increasingly finding other ways to overcome their companies' budget constraints for open source workers overall. More than 70% now use incentives such as offering more vacation, flexible work hours or the option to telecommute, reports **Dice**.
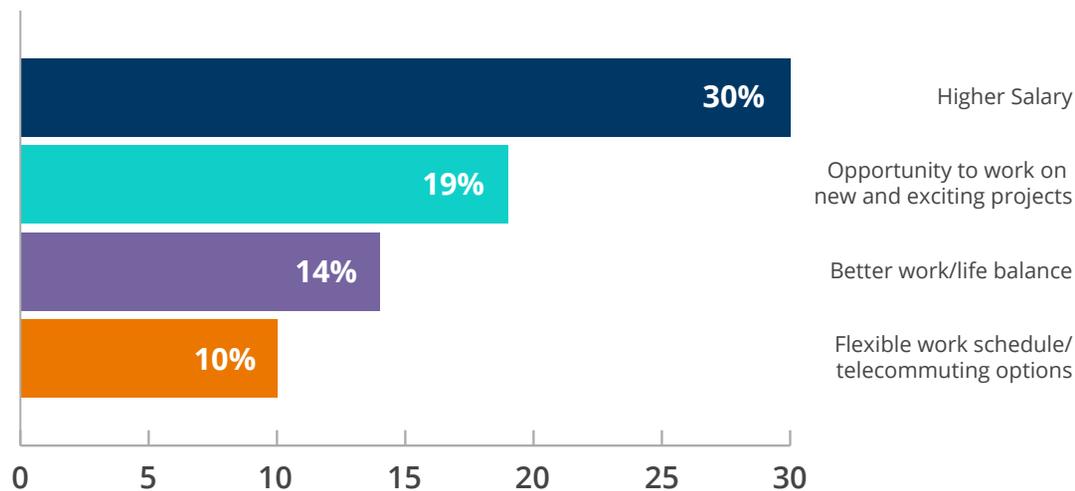
What **keeps open source professionals** from moving jobs:

While higher salary remains the top incentive to change jobs (cited by 81%; 82% said so last year), 74% would consider moving for the opportunity to work on new and exciting projects and 61% for more flexible work schedule or better work/life balance.

Similarly, professionals said higher salary (30%) would be the biggest motivator to stay, followed by the opportunity to work on new and exciting projects (19%) and the promise of better work/life balance (14%).

Professionals ranked the ability to architect solutions based on open source software (75%) as the most valuable skill to have, compared to 77% who said so last year. Experience with open source development tools like GitHub is also important, they said, as well as the ability to deploy open source software (both 62%), followed by knowledge of new tools (58%).

Yet money isn't their primary motivator. Only 13% of respondents (14% in 2017) reported that money and perks most influenced their decision to pursue an open source career. Instead, they cited the ability to work with the latest technology (65%), the freedom of open source (64%) and their personal passion about open source (62%).

Similarly, only 3% said money and perks were the best thing about their jobs, the same as last year. Thirty percent cited the ability to work on interesting projects, collaborate with a global community (19%) and the opportunity to work on the most cutting-edge technology challenges (16%). These numbers are essentially unchanged from 2016 and 2017.

The fierce market for open source talent shows no signs of abating, driven by the push to DevOps practices and use of cloud-based technologies such as containers. It's providing a wealth of opportunities for professionals with those skills and those aspiring to gain them. Companies increasingly see value in training employees and helping them gain certifications. To further expand the talent pool, a growing number of companies are developing diversity initiatives, which can only become more effective with increased visibility.

THE LINUX FOUNDATION

The Linux Foundation promotes, protects and standardizes Linux by providing unified resources and services needed for open source to successfully compete with closed platforms.

To learn more about The Linux Foundation or our other initiatives please visit us at **www.linuxfoundation.org**

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