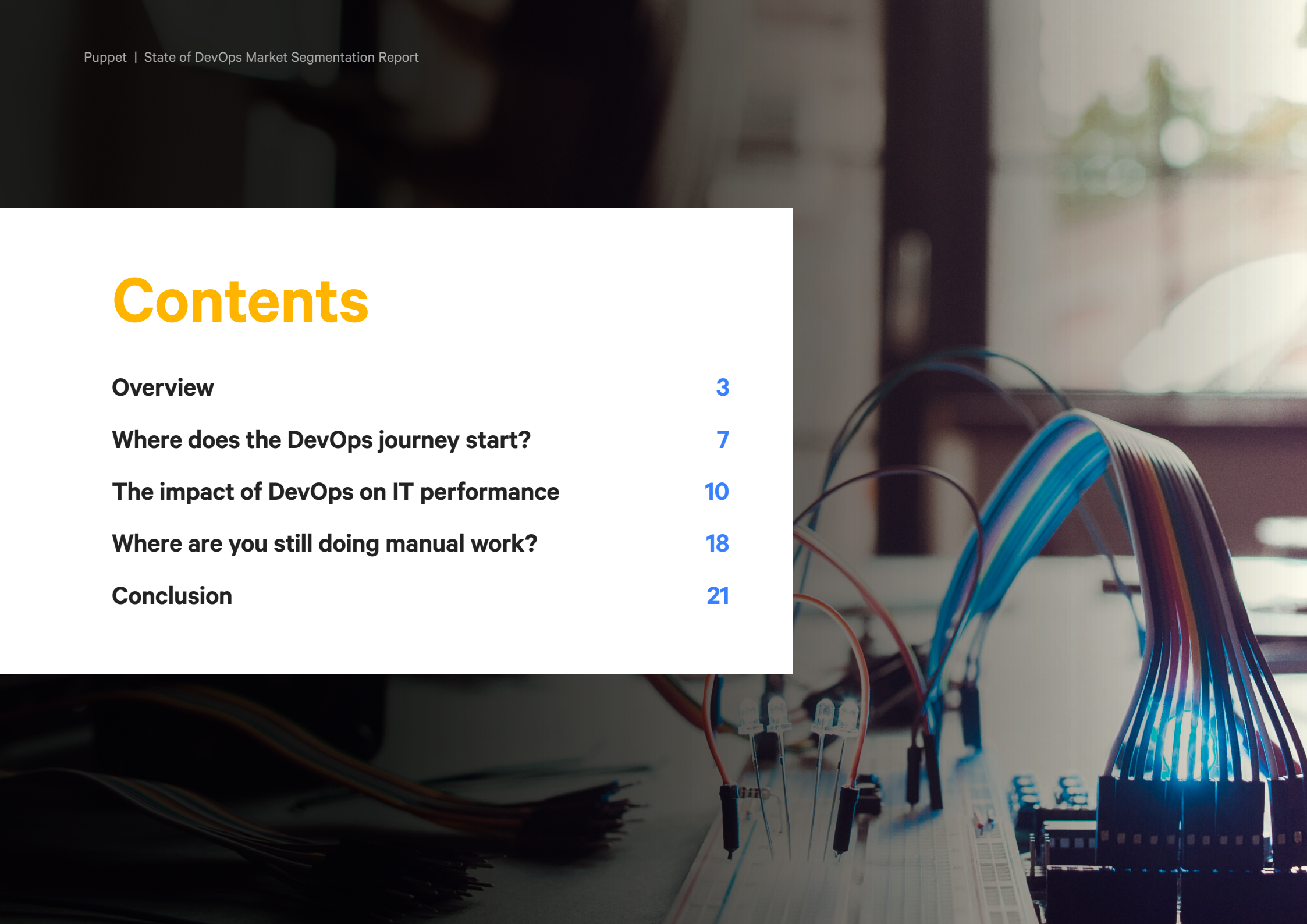
State of DevOps

Market Segmentation Report

puppet



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Overview

For the past six years, Puppet has produced the annual State of DevOps Report[1] and collected more than 27,000 responses from technical professionals around the world, making it the longest-running and most comprehensive study on the topic of DevOps today.

One of the most common requests we've gotten over the years is for segmentation of the data by region, industry and company size. In this special report, we've segmented the 2017 State of DevOps survey data to dive deeper into trends and patterns we're seeing in each of these segments.

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Key findings

Most organizations start their DevOps journeys by addressing their most acute pain points. Deployment automation, version control, continuous integration and infrastructure automation were the most common starting points for the DevOps journey. Least common starting points were lean practices, such as working in small batches to allow single piece flow, visualization of key quality and productivity metrics, and setting limits on work in process.

The larger the company size, the higher the proportion of low IT performers. We found that there's little difference in the proportion of high IT performers between companies of various sizes. However, as the company size grows, the proportion of low IT performers also increases.

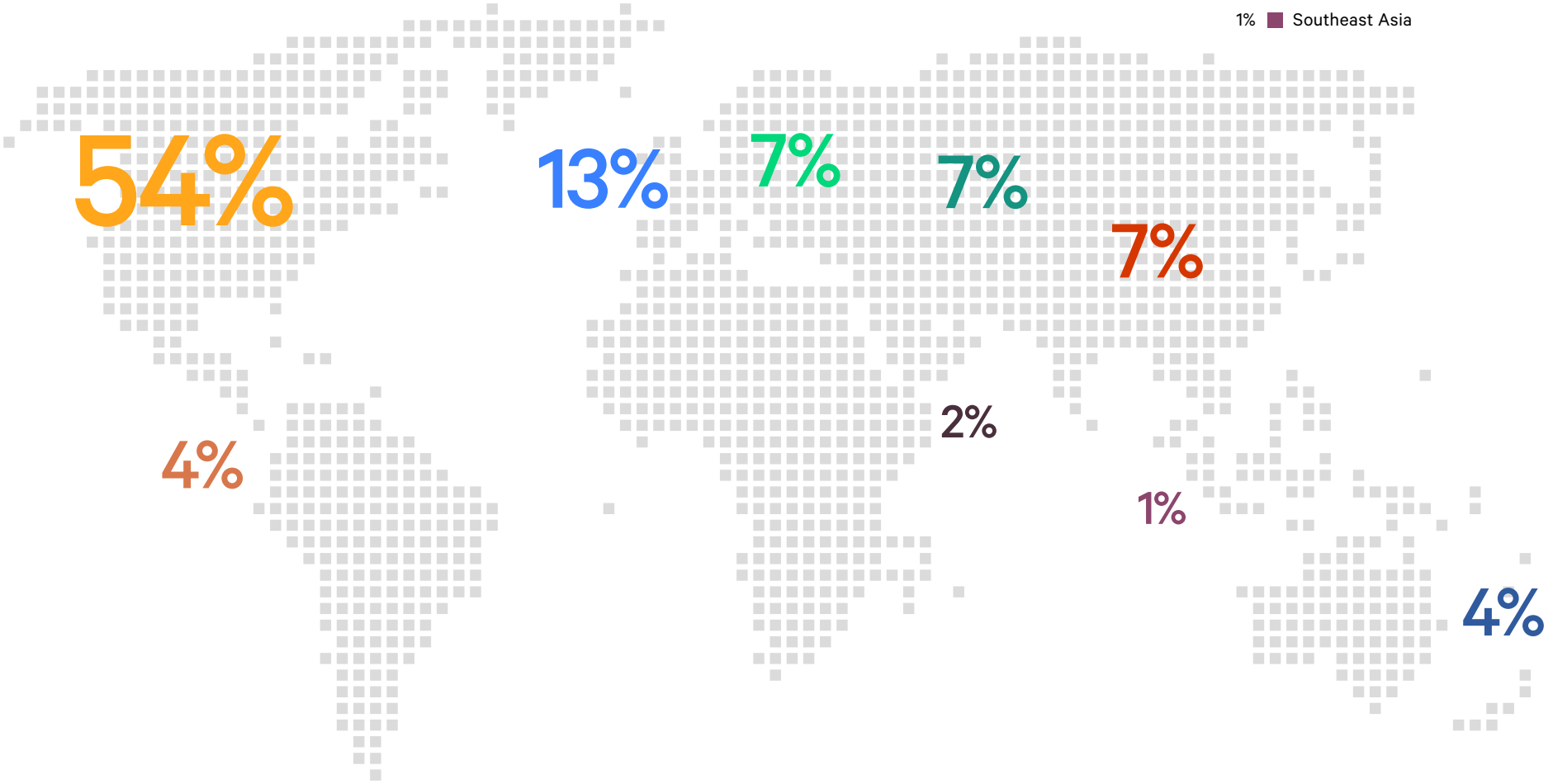
Automation is not as pervasive as you think. The majority of our respondents reported high levels of manual work across configuration management, deployment, testing and change approval processes. As they adopt DevOps practices, automation is a key enabler along the journey, though it remains inconsistent and spotty across their organizations.

Industry matters. While all industries have about the same proportion of high IT performers, the proportion of low IT performers by industry varies greatly. The media and entertainment and retail industry have the lowest percentage of low IT performers, while financial services, insurance and manufacturing companies had the highest proportion of low performers.

Demographics & firmographics

In 2017, we surveyed nearly 3,200 technical professionals from organizations of all sizes doing business around the world. About 1,725 (54 percent) are individuals working in the US and Canada.

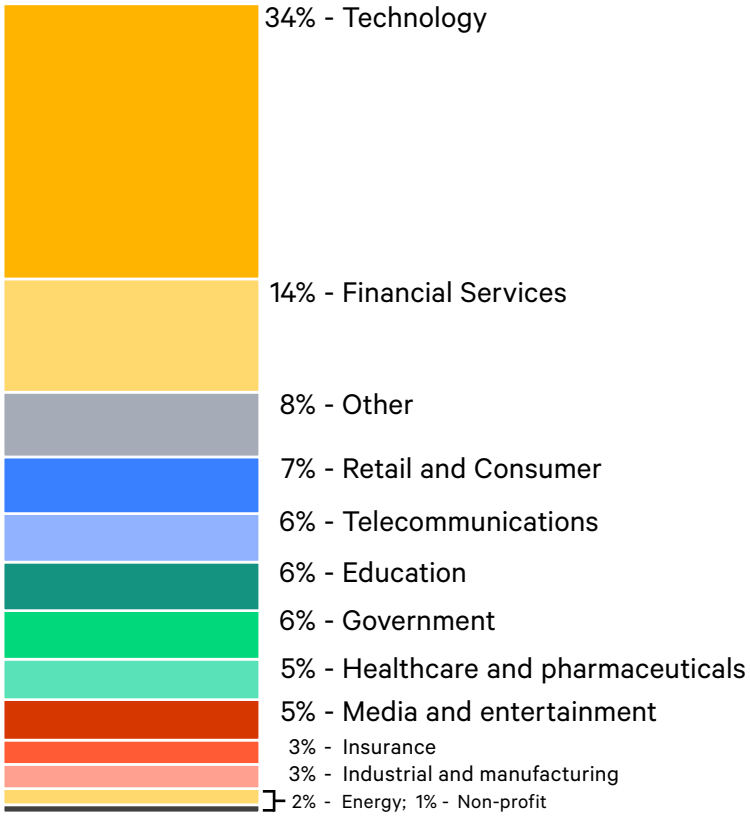
- 54% US & Canada
- 13% UK, Ireland, Isle of Man
- 7% Northern and Southern Europe
- 7% Central and Eastern Europe
- 7% India, Japan, Northern Asia
- 4% Australia & New Zealand
- 4% Mexico, Central and South America
- 2% Middle East and Africa
- 1% Southeast Asia



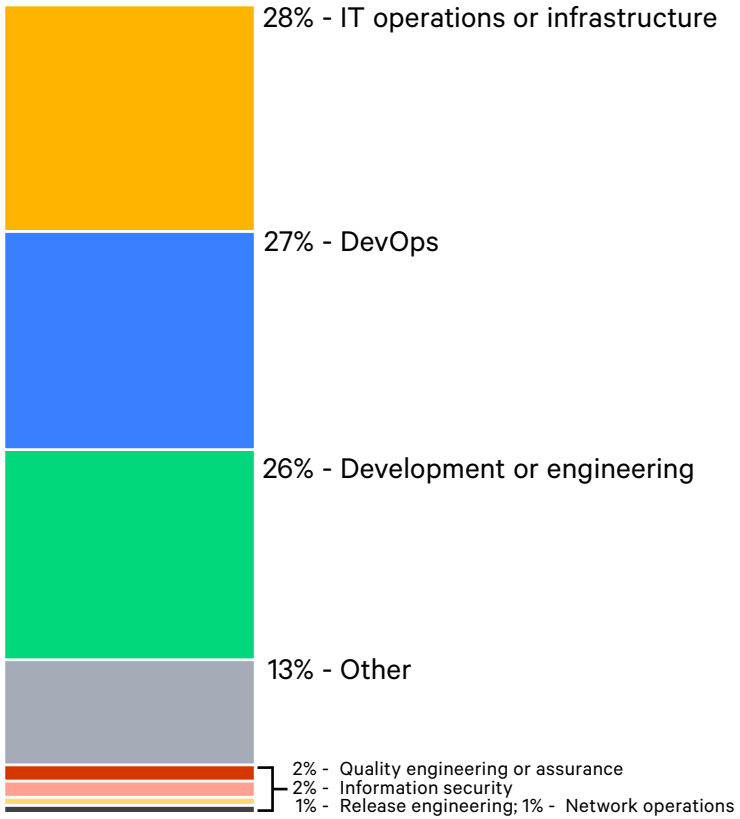
Respondents also represent a wide range of industries, including technology (34 percent); financial services (14 percent); retail and consumer (7 percent); and telecommunications, education, government, healthcare and media and entertainment (5 to 6 percent).

More than 75 percent of respondents were split evenly between IT operations or infrastructure (28 percent), DevOps (27 percent), and development or engineering (26 percent). We had very few respondents from other functions in the software delivery workstream: quality engineering or assurance, information security, release engineering, and network operations made up only six percent of respondents.

Responses by Industry (Percentage of Total)



Responses by Department



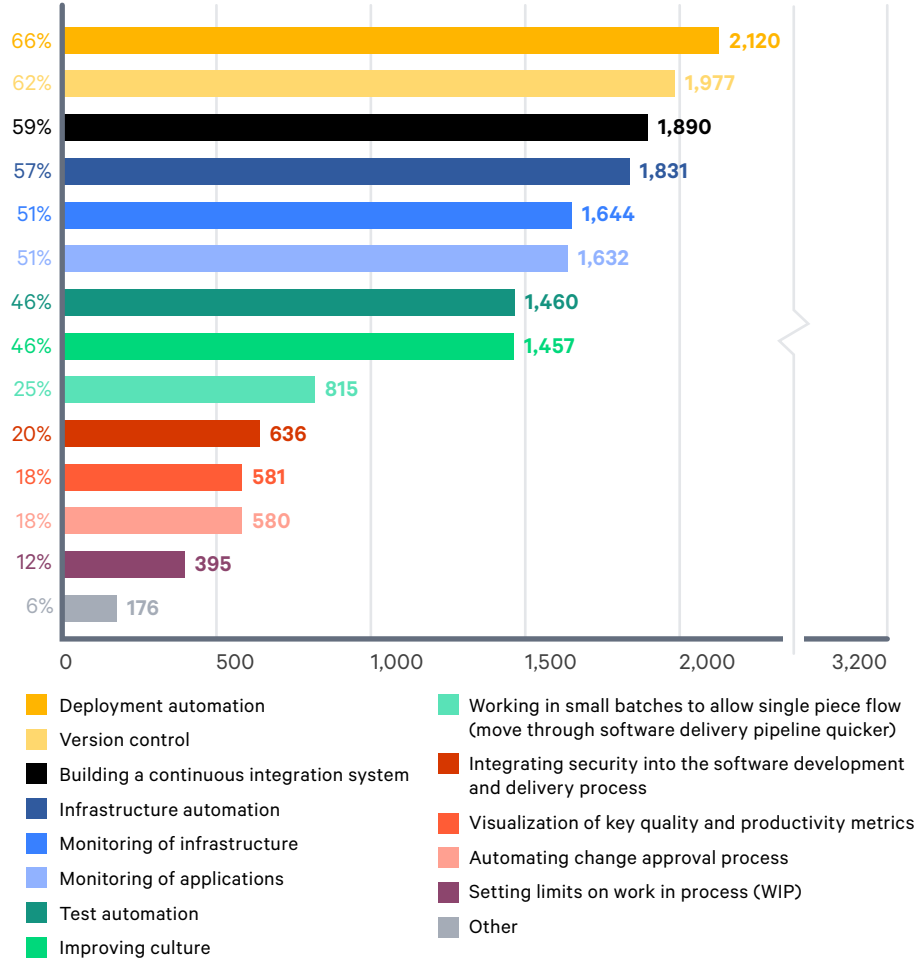
Where does the DevOps journey start?

When organizations begin looking at DevOps practices, they often focus on the areas that are causing the most pain. In our **2015 State of DevOps Report**, we found that a high degree of deployment pain correlated with low performance across the board. Not surprisingly, deployment automation was the starting point for the majority of our respondents. Version control and building a continuous integration system were also popular starting points and of course, are interrelated practices. The fourth most common starting point was infrastructure automation. In the data from 2017, we found:

- Two-thirds (66 percent) cited deployment automation as a starting point for DevOps;
- 62 percent cited version control;
- 59 percent cited continuous integration;
- 57 percent cited infrastructure automation.

Where did you start your DevOps journey?

Select all that apply.

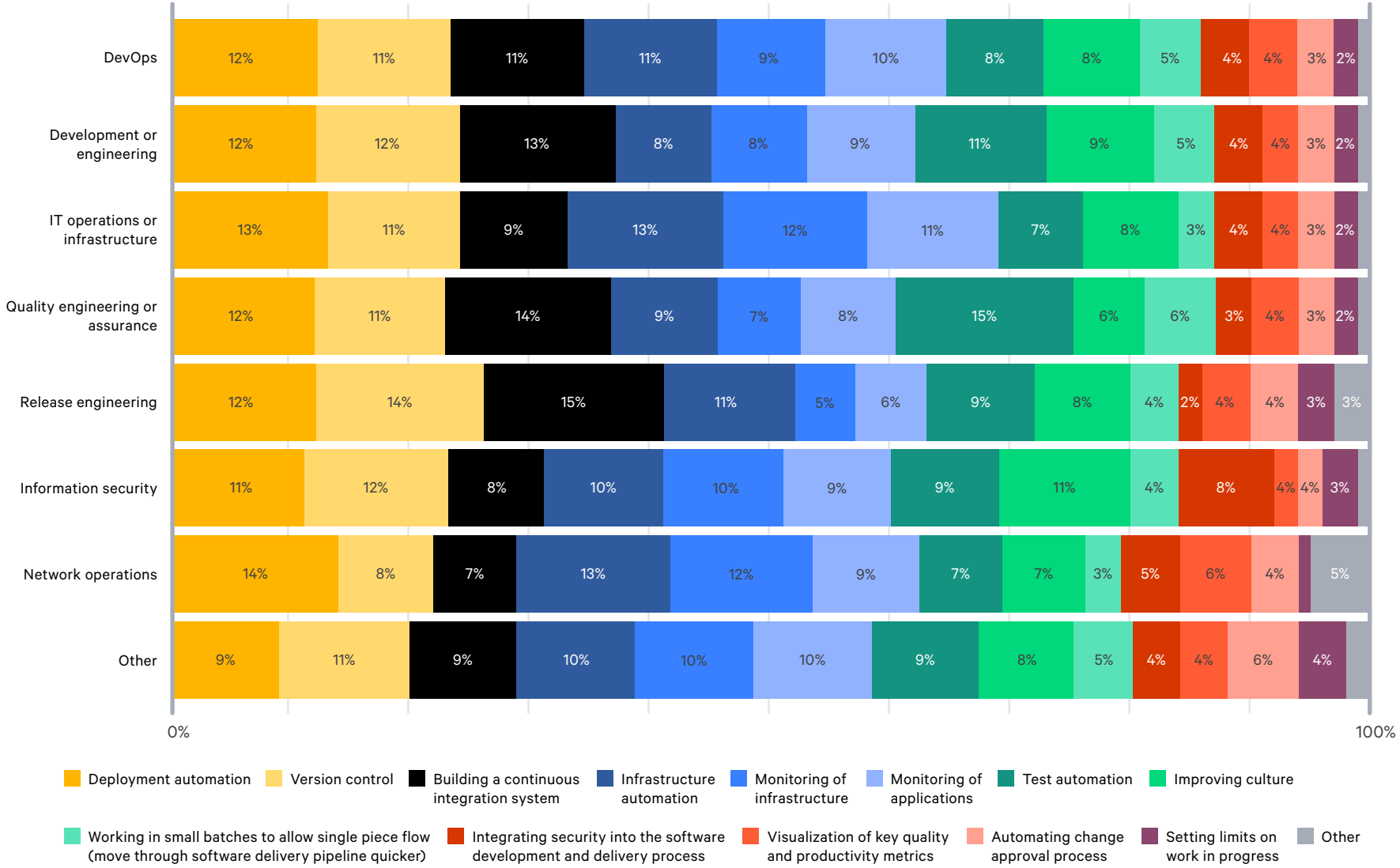


Least common starting points were lean practices, such as working in small batches to allow single piece flow, visualization of key quality and productivity metrics, and setting limits on work in process (WIP). This makes sense because lean improvements are typically optimizations that organizations make once their house is in order. Other less common starting points were ones related to processes that are typically deeply ingrained and difficult to change, namely integrating security into software development and delivery processes, and automating change approval processes.

When we drilled down into where specific departments started their DevOps journey, we found that for most, the DevOps journey centers around their greatest and most specific pain points. For example, release engineering teams were more likely to start with version control and building a continuous integration system. Quality teams were more likely to start with test automation.

We were curious to see if there would be variances between IT operations or infrastructure teams and DevOps teams, and it's interesting to note that IT operations or Infrastructure teams were more likely to start at infrastructure automation and monitoring, whereas starting points for DevOps teams were more evenly distributed across all practices. One possible explanation for this is that IT operations or infrastructure teams can be more narrowly focused on making local improvements to the infrastructure they manage, whereas DevOps teams have a broader scope of responsibility that includes infrastructure and application concerns.

DevOps journey starting points by department (software delivery stream)



The impact of DevOps on IT performance

In the 2013 State of DevOps Report, for the first time ever, we defined IT performance and the technical practices most commonly used by high-performing IT teams. Over the years, we've been able to deepen our understanding of IT performance and its relationship to organizational performance, culture, technical practices, and more. We measure IT performance along two main dimensions: throughput of code and stability of systems. Throughput is measured by how frequently a team is able to deploy code and how fast it can move from committing code to deploying it. Stability is measured by how quickly the system can recover from downtime and how many changes succeed, versus how many fail.

Over the years, we have found that high performers do significantly better than their lower-performing peers in terms of throughput and stability.

In 2017, we found that the high performers have:

- 46 times more frequent code deployments
- 440 times faster lead time from commit to deploy
- 96 times faster mean time to recover from downtime
- 5 times lower change failure rate (changes are 1/5 as likely to fail)

High performers report experiencing:

more frequent code deployment

faster mean time to recover (MTTR)

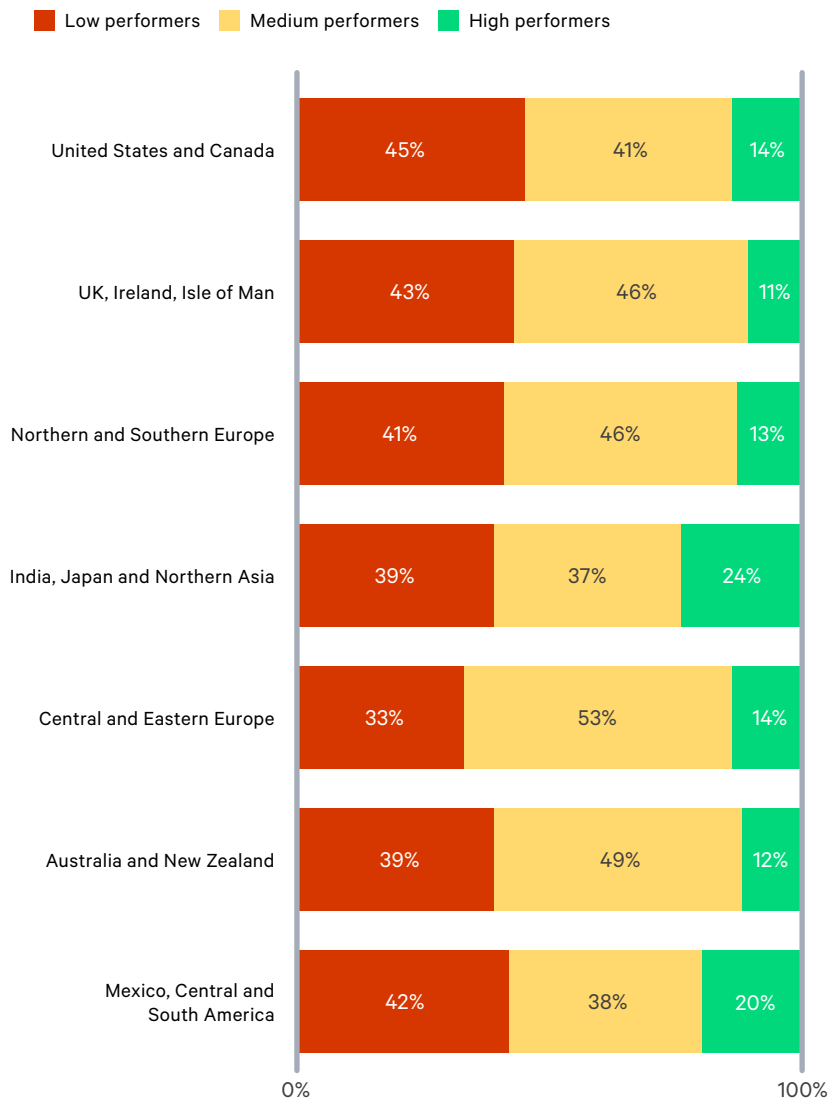
faster lead time from commit to deploy

lower change failure rate

IT performance by region

Regions with the highest percentage of high performers were India, Japan and Northern Asia (24 percent) and Mexico, Central and South America (20 percent).

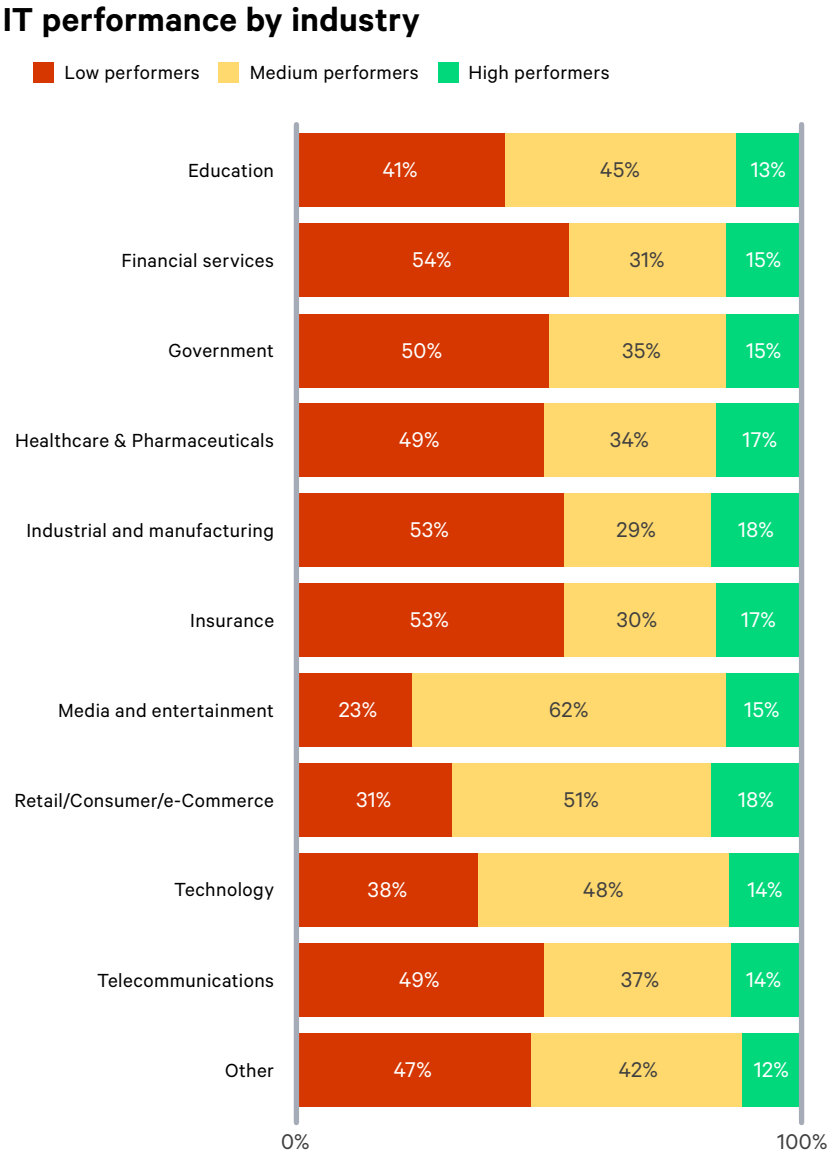
We were surprised to see that the United States and Canada had the highest percentage of low performers (45 percent).



IT performance by industry

When we looked a little closer, we found that industry matters when it comes to IT performance gains that have resulted from applying DevOps practices. While all industries have about the same proportion of high IT performers, the proportion of low IT performers by industry varies greatly.

Media and entertainment and the retail industry have the lowest percentage of low IT performers, at 23 percent and 31 percent respectively. Financial services, insurance and industrial and manufacturing companies had the highest proportion of low performers at about 53 percent each. The highest proportion of medium performers, at 62 and 51 percent respectively, were found in media and entertainment and retail.

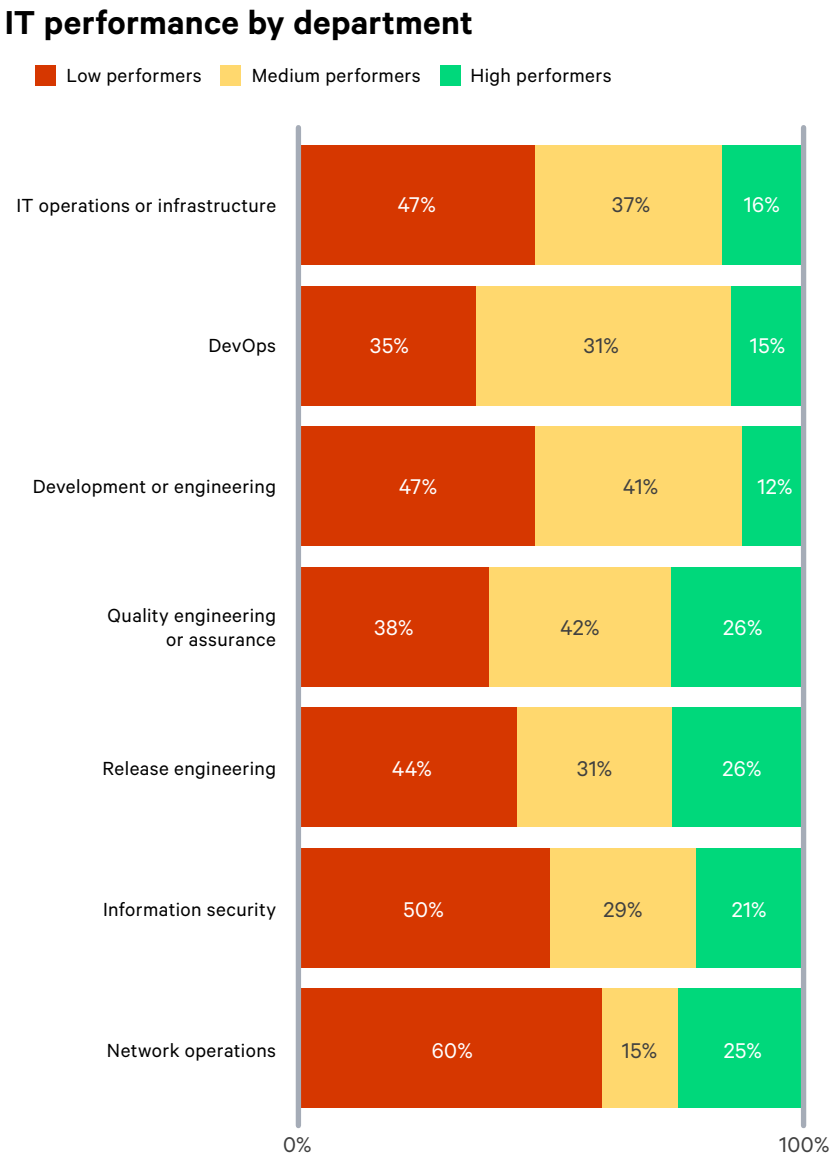


IT performance by department

A key selling point for DevOps is higher quality releases, where issues are found earlier in the software delivery lifecycle, well before they make it to production, and to the customer. Of the respondents that work in a quality engineering or assurance department, 26 percent were from organizations with high IT performance.

Forty-seven percent of respondents working in IT operations and development or engineering departments fell into the low performance cluster, compared with only 35 percent of respondents in DevOps departments. Respondents from quality engineering or assurance departments reported the highest levels of performance, suggesting they see improvement in the quality of IT and how the work is getting done.

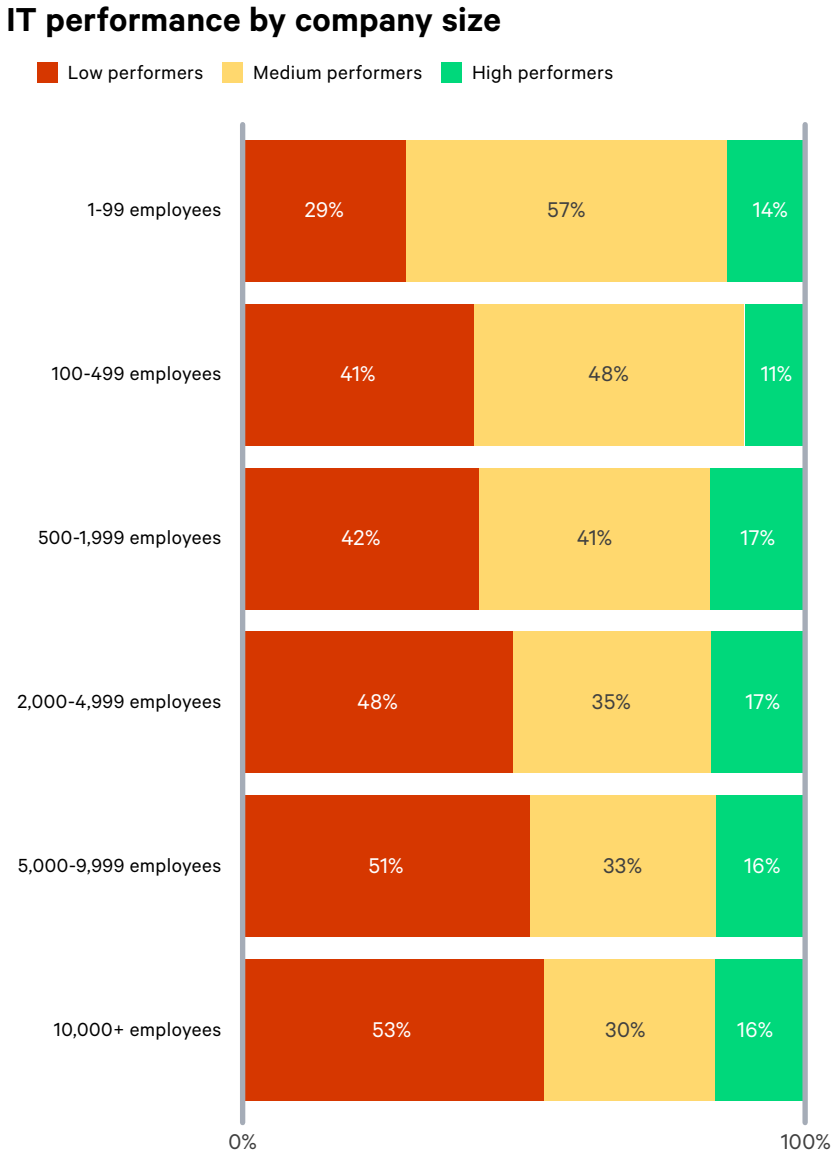
It's important to note that only two percent of respondents were from quality engineering or assurance and release engineering departments, and only one percent from information security and network operations departments. These numbers may not be representative of those departments.



IT performance by company size

One of the things we were interested in uncovering is whether small companies are more likely to have higher IT performance compared with large companies. We found that there's little difference in the proportion of high IT performers between companies of various sizes.

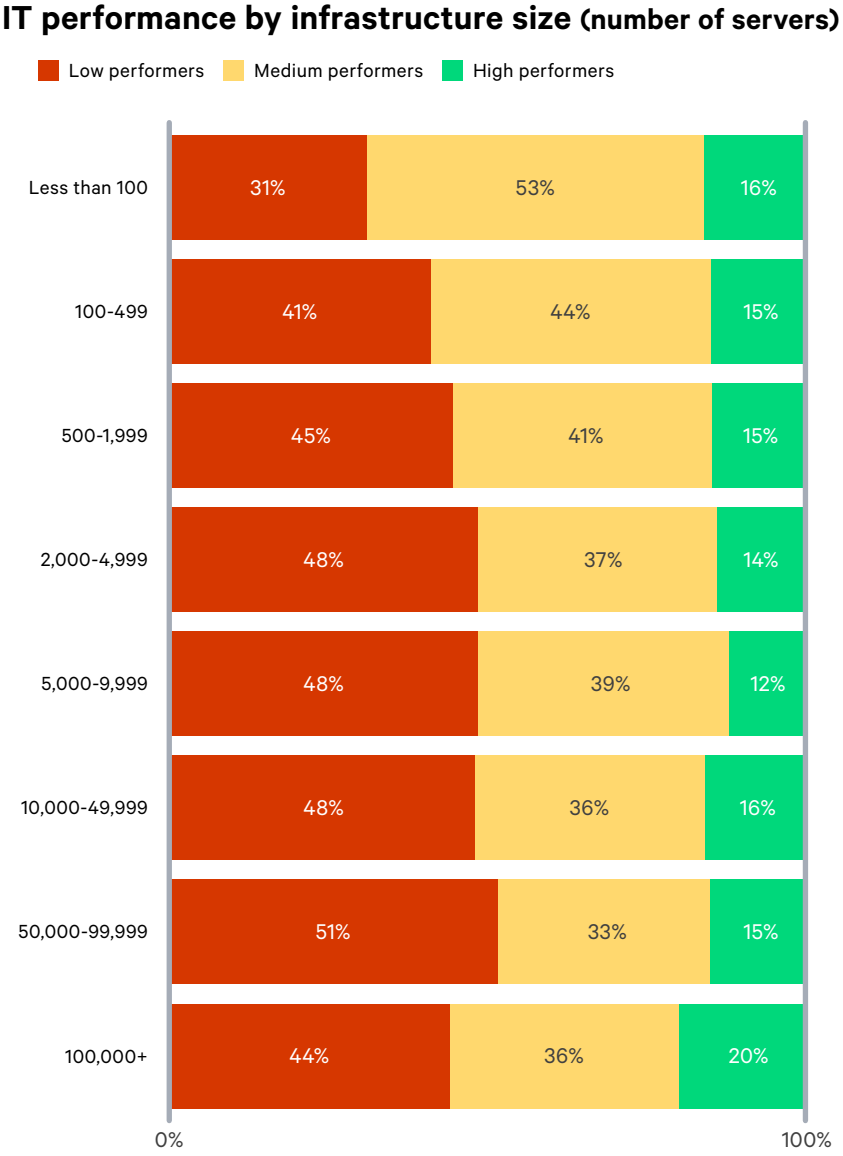
However, as the company size grows, the proportion of low IT performers also increases. Just 29 percent of respondents working for companies with less than 100 employees were from low performing organizations compared with more than 50 percent for those working for companies with 5,000 employees or more.



IT performance by infrastructure size

We also wanted to know if organizations with smaller numbers of servers to manage enjoyed higher throughput and stability compared to organizations with larger estates. Organizations with more than 100,000 servers had the highest proportion of high performers (20 percent) and the second lowest proportion of low performers (44 percent).

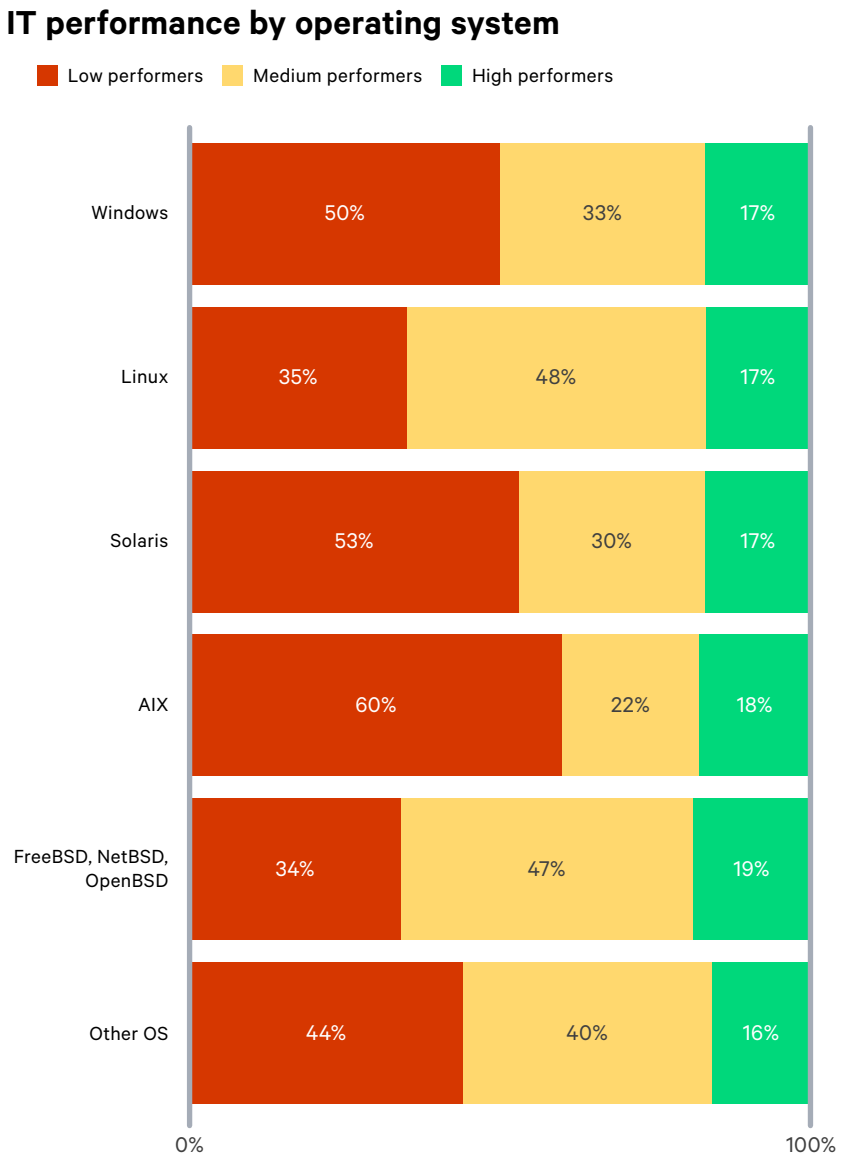
We believe that the complexity of managing such a massive IT estate necessitates high levels of automation which leads to higher IT peformance. Organizations with fewer than 100 servers had the lowest proportion of low performers at 31 percent. As a natural byproduct of having less complexity to manage, these organizations are able to achieve higher performance.



IT performance by operating system

Windows continues to be the most widely deployed operating system (OS) amongst our respondents with nearly 100 percent having Windows servers of some kind. Sixty three percent of respondents have also widely deployed on Linux. For all OS platforms, including lesser used Solaris, IBM's AIX, and *BSD, the proportion of high IT performers was roughly 17 percent.

We saw more variance in the proportion of low IT performers across different OS platforms. AIX, Solaris, and Windows had the highest proportion of low IT performers (60, 53, and 50 percent, respectively). Linux and *BSD users had the lowest proportion of low performers at roughly 35 percent.



Where are you still doing manual work?

So, if you're on the DevOps journey, you're automating more and doing less manual work, right? The answer is surprisingly less black and white, according to our survey respondents.

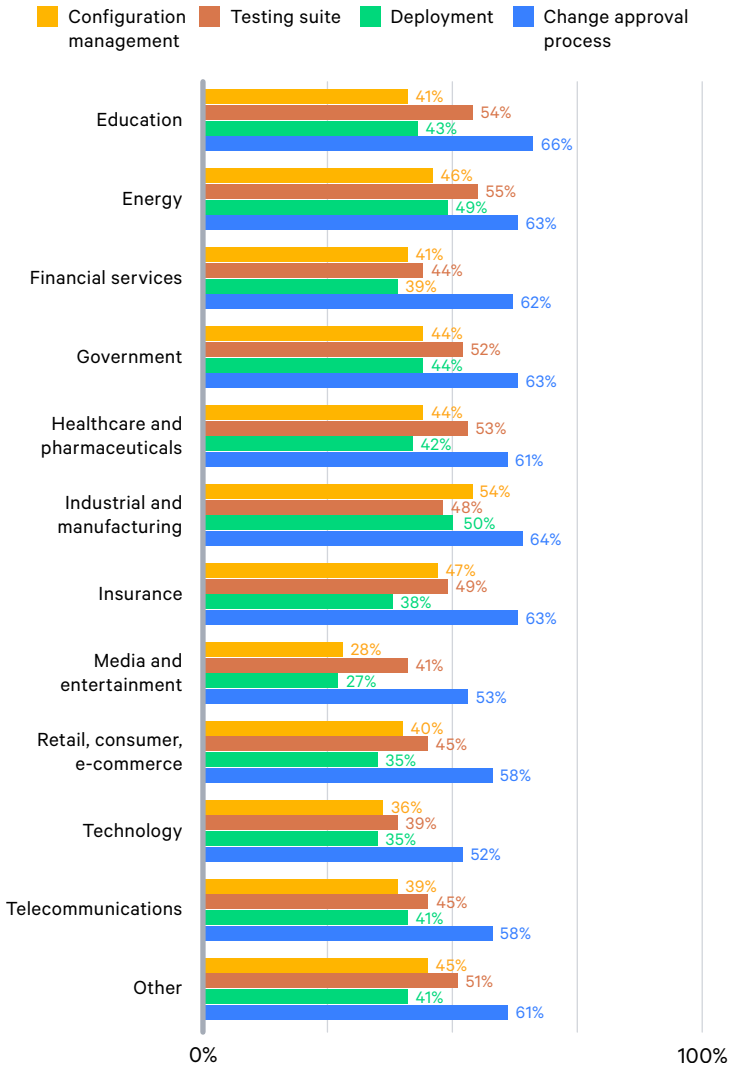
Regardless of industry, about two thirds report still using manual processes for many tasks, including change approval processes, the last horizon for the "human-knows-best" function. Given the vagaries of how, when, and what changes in a project or software deployment, it's not surprising that people are giving up that decision-making to automation or related DevOps practices just 30 percent of the time.

Configuration management and software deployment is a very different story. About 40 percent of survey respondents told us they still do manual configuration management and deployment. The tools are maturing in this area and so is user confidence in automating these repetitive, but important tasks.

Not surprisingly, the media and entertainment and technology industries reported the lowest levels of manual work overall. These industries face rapid change and constant disruption which require them to automate more of their processes to deliver value faster to their customers. The media and entertainment industry leads the pack for configuration management and deployment, reporting that they're relying on manual processes only about 28 percent and 27 percent of the time respectively. When it comes to testing and change approval processes, the technology industry leads at 39 percent and 52 percent respectively.

Slower-moving industries such as industrial and manufacturing and energy, have higher levels of manual work though we know that those industries are also facing a significant amount of change and turnover.

Manual work percentage by industry

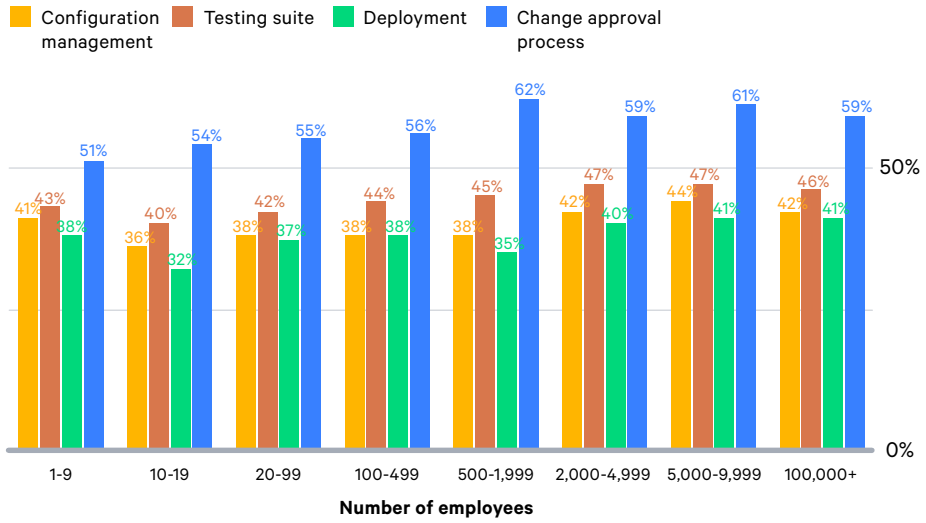


We were surprised to see little variance in manual work based on company size and infrastructure size. Manual configuration management, testing and deployment were lowest in companies with 10-19 employees, at 36, 40, and 32 percent respectively.

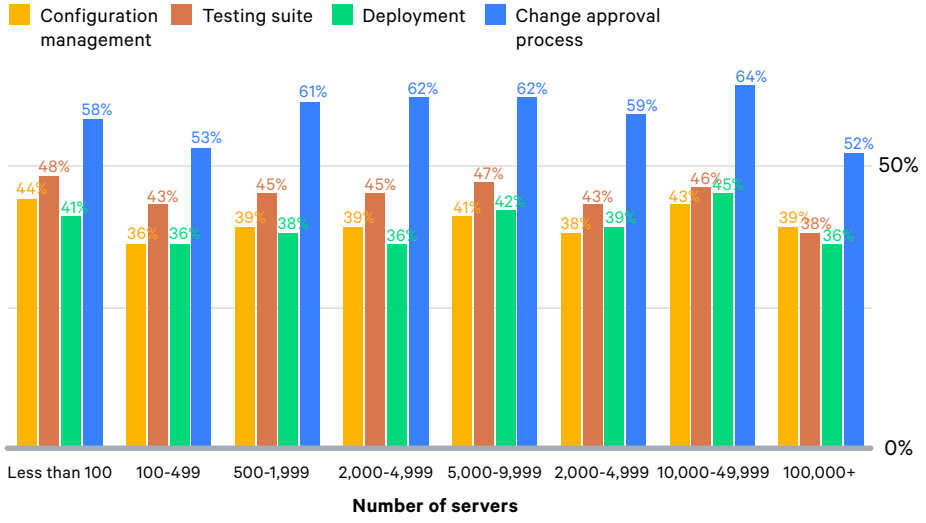
Respondents with infrastructure sizes of 100-499 servers had the lowest percentage of manual configuration management (36 percent), whereas respondents with infrastructure sizes of 100,000+ had the lowest levels of manual testing (38 percent) and change approval (52 percent).

Perhaps more interesting is the fact that no matter a company's size or its number of servers, testing and change approval processes account for most manual work.

Manual work percentage by company size



Manual work percentage by infrastructure size

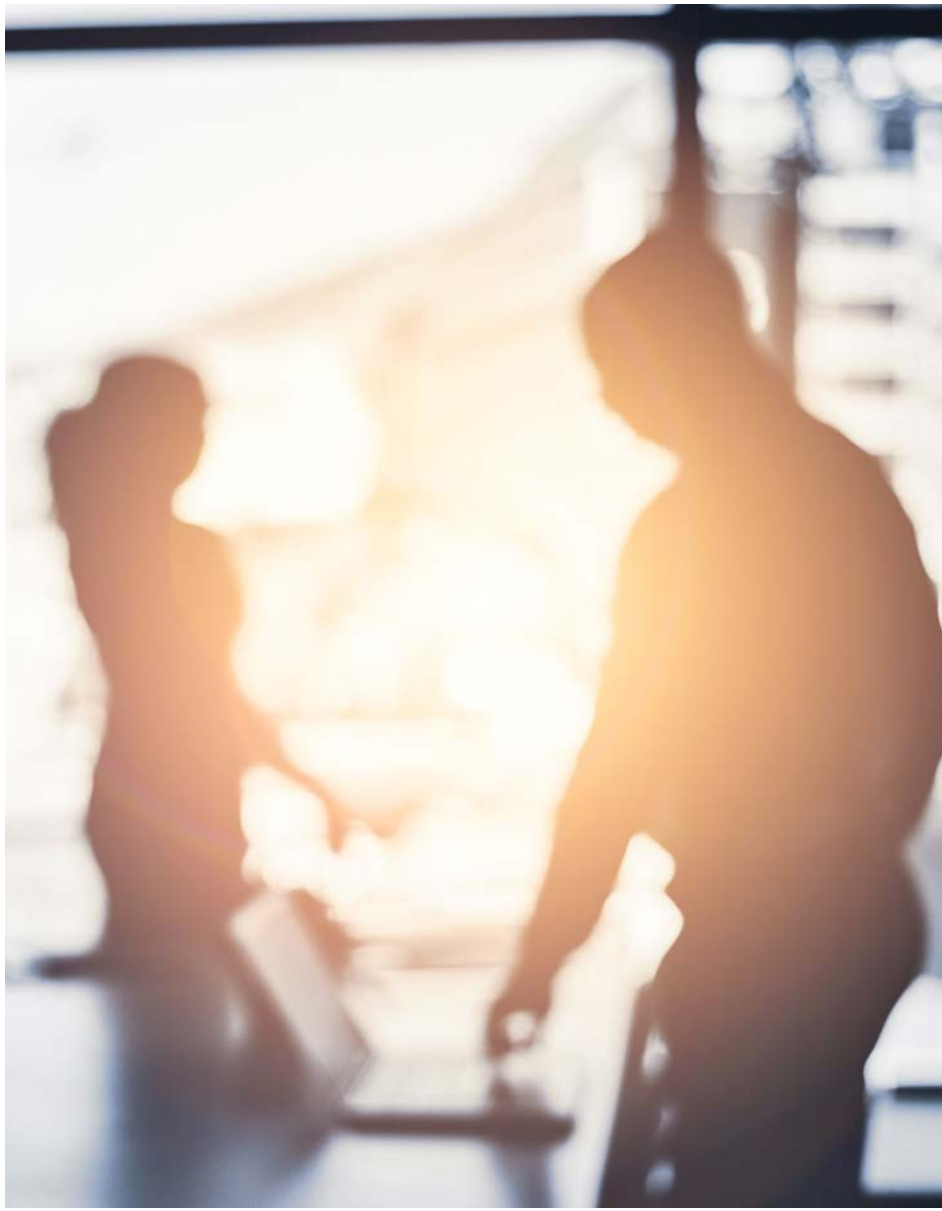


Conclusion

In 2018, it's clear that organizations of all sizes and across all industries and regions of the world are continuing to expand their DevOps practices, and moving toward making automation more pervasive. The efficiency, speed, and clarity these practices bring enable organizations to move more quickly, which helps them compete (or keep up), and continues to provide returns in the shape of improving IT performance.

Interestingly, as DevOps practices become more widespread, expectations are rising. What many might have considered "great" IT efforts just a few years ago, might appear as fair to middling today. That's an interesting twist that suggests that the gains provided by DevOps — getting departments and teams to work better across an organization — is no longer just a "nice to have" but a given. DevOps is simultaneously raising the bar and expectations of what's possible.

Interested in more benchmark data?
Send us your ideas at **devopssurvey@puppet.com**.



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