2018 State of Database DevOps

Survey on DevOps adoption rates among SQL Server Professionals

redgate

Foreword

2017 has been an amazing year for the DevOps community, as DevOps principles and practices have clearly crossed over into the mainstream, in organizations both large and small.

With Digital Transformation being high on the CEO and CIO agenda, organizations are seeking to accelerate their time to market and the consensus view is that traditional, siloed models of IT delivery are no longer meeting the needs of organizations and hence they are embracing DevOps as the new operating model for IT.

But as we can see in the Redgate 2018 State of Database DevOps Report, this DevOps transformation is not just a technical one – only 10% of respondents identified 'Lack of budget to invest in new tooling' as the main obstacle to DevOps adoption, for example. The highest obstacles were actually people and business challenges – 'Lack of appropriate skills in the team' (24%), and the impact of 'Disruption to existing workflows/business' (20%).

At DevOpsGuys we've clearly seen this shift too in our work with our clients – the conversation is no longer about *Are we going to do DevOps?*. It's now *How can we scale up our DevOps initiatives?*, *How do we find time to adopt DevOps because we're too busy firefighting?*, and *How do we bring our people with us on the DevOps transformation journey?*.

The database community faces significant challenges on this journey – for example, respondents identified that only 52% of database development uses version control, compared to 81% in the application development community, and test automation was only at 15% compared to 40%.

So the challenges for the database community in 2018 are simple: how to accelerate our personal DevOps transformation by learning new skills, techniques and behaviors; how to accelerate our DevOps transformation by relentlessly trying to break down silos and collaborating across Dev and Ops; and how to contribute back to the wider community by contributing our lessons learnt via blogs, meetups and conferences.

**Steve Thair**
CTO & Co-Founder, DevOpsGuys
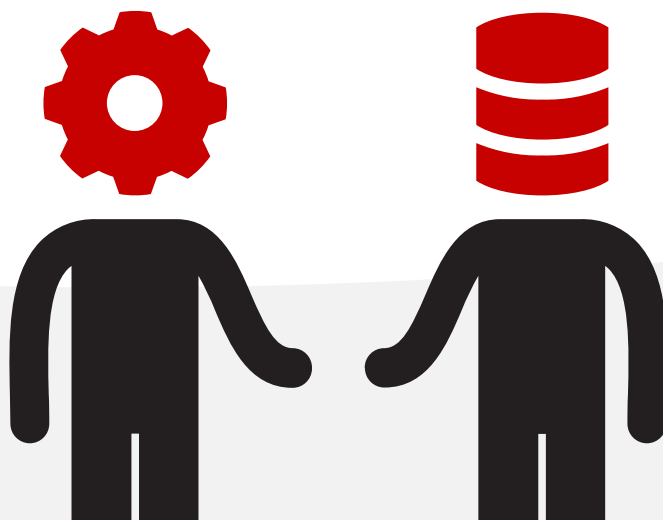
Key Findings

Last year's State of Database DevOps report revealed that many SQL Server professionals were aware of the benefits of DevOps, but the challenges in implementation were holding organizations back from getting started.
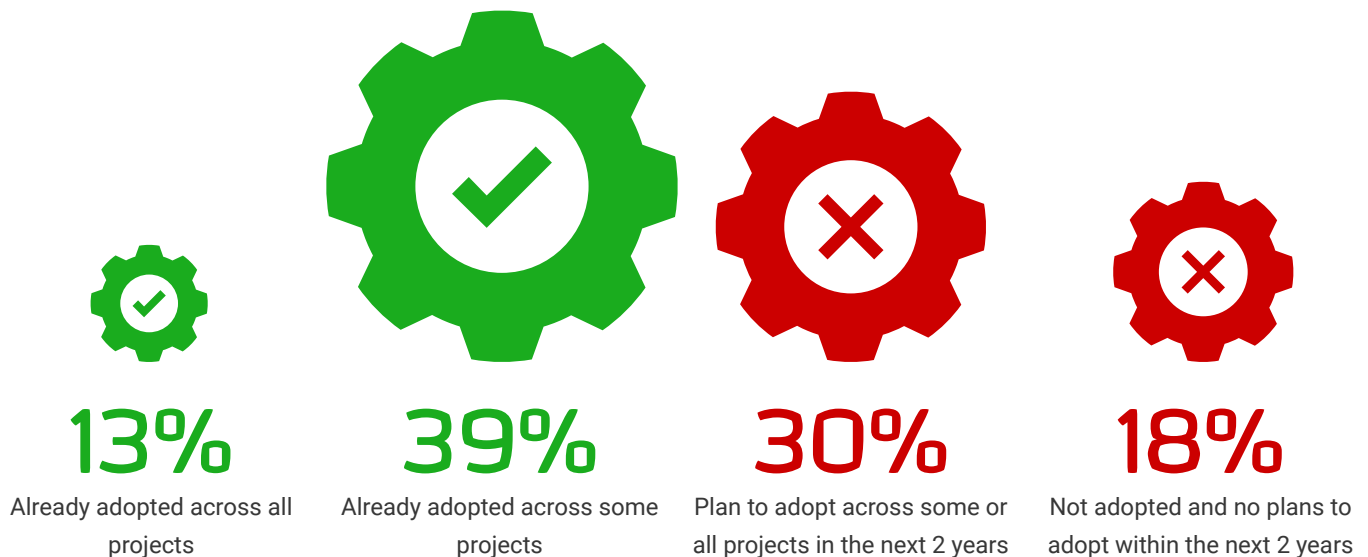
The 2018 survey clearly shows that DevOps adoption is gathering momentum, and the importance of database DevOps to regulatory and compliance requirements stands out as a new key driver. This year more than 700 people participated in survey, coming from across the globe and representing a wide range of job roles, company sizes and industries. Among the key findings are:

- ⚙ Although it's noticeable that the perceived challenges of implementing DevOps practices are largely the same as last year, the benefits are increasingly compelling. There's been a 10% increase in respondents who have already adopted DevOps practices across some or all of their IT projects, and now just 18% have no current plans to start applying DevOps practices to their software delivery.

- ⚙ 76% of respondents have developers in their team who work across both applications and databases. But the greatest challenge with integrating database changes into a DevOps process would still be synchronizing application and database changes, and overcoming different approaches to development within these multi-functional teams.

- ⚙ 63% of respondents think a DevOps approach to the database would have a positive impact on regulatory and compliance requirements, with two thirds of organizations using production data in their development or test environments, and 57% recognizing that data should first be modified or masked.
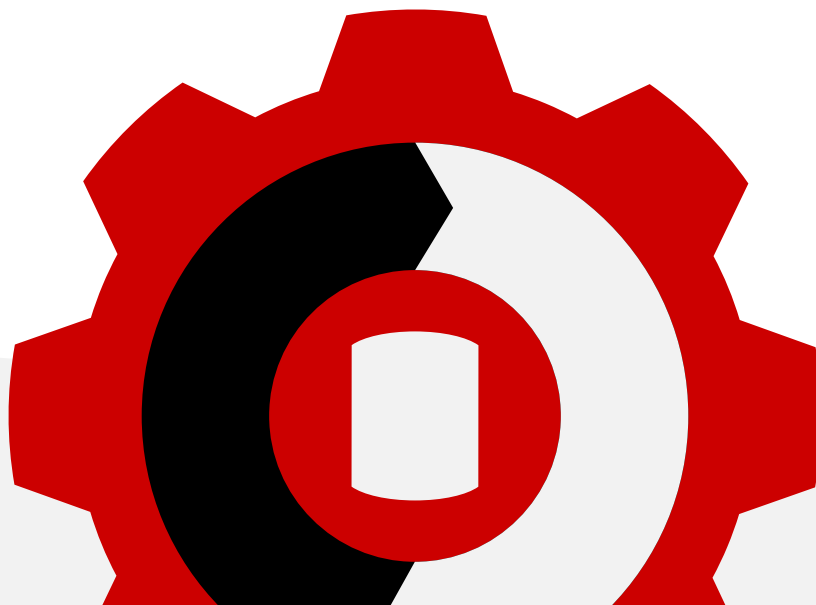
1 **Has your organization already adopted, or do you plan to adopt, a DevOps approach across any of your IT projects?**

13%

Already adopted across all projects

39%

Already adopted across some projects

30%

Plan to adopt across some or all projects in the next 2 years

18%

Not adopted and no plans to adopt within the next 2 years

52%% of respondents had already adopted a DevOps approach to some or all of their projects, a 10% increase on last year, and a clear demonstration that DevOps is firmly established in the mainstream. A further 30% plan to adopt during the next two years, leaving just 18% of respondents having no current plans to adopt a DevOps approach within their organization within the next two years.

Across industry sectors, results varied, with the highest levels of adoption seen in IT Services and Retail where just under 60% of respondents were using DevOps processes across some or all of their projects. The Finance and Healthcare sectors were not far behind at just over 50%, perhaps demonstrating the importance of process in highly regulated industries. Just 5% of respondents from Technology and Telecommunications industries had not yet implemented, or planned to implement, DevOps practices.

Unsurprisingly, lower levels of adoption were seen in the Government, Education and Non-Profit sectors, where less than 40% of respondents had adopted any kind of DevOps practices. In these sectors, a higher number of respondents, 36%, also thought it unlikely they would adopt this new way of working within the next two years.

2

What was, or what would be, the main obstacle to implementing a DevOps approach in your organization?

24%	Lack of appropriate skills in the team
20%	Disruption to existing workflows/business
18%	Lack of alignment between development and operations teams
12%	Lack of awareness of benefits to the business
11%	Lack of budget to invest in new tooling
10%	Lack of support from executive leadership
5%	Other

The greatest obstacle to embracing a DevOps ways of working overall was still considered to be a lack of appropriate skills in the team, closely followed by disruption to existing workflows or business.

Interestingly, the number of respondents stating lack of awareness of benefits to the business has fallen by almost a third since last year, suggesting that organizations are moving from evaluating DevOps to working to overcome the challenges of implementation.

The barriers were notably different between groups of respondents though. Those who were planning to adopt DevOps practices some time in the next two years seemed most concerned about disruption to existing workflows and business. This is an interesting change from last year, when the majority of those planning DevOps adoption were most concerned about a lack of appropriate skills in the organization. This could suggest that for many organizations, the early stages of adopting DevOps have included acquiring necessary skills, ahead of rolling out changes to processes and tooling.

However, for those respondents who didn't have any plans to move towards a DevOps way of working, a lack of awareness of the business benefits of DevOps was cited as the main obstacle, accounting for close to 40% of the responses. The second highest response, from 15% of this group, was cited as a lack of support from executive leadership. This suggests that until the benefits of DevOps are better understood, particularly by executives and leaders, organizations will simply not recognize the potential return on investment.

3 **Which of these best describes how closely your developers and your Database Administrators (DBAs) are integrated?**

20%
Great
All work together effectively as one team, using standardized processes and tools

38%
Good
Teams collaborate together with DBAs getting more involved on an ad-hoc basis when needed

27%
OK
DBAs aren't really involved and only work with development when it's time for a production deployment

15%
Poor
DBAs are completely siloed, unaware of what's happening in development and deploy database changes to production in isolation

The majority of respondents reported that their development team and DBAs are well integrated, with 58% answering either 'good' or 'great' to the question about levels of collaboration.

This figure went up to 68% among those who had already adopted a DevOps approach to some or all of their projects. But with 11% of these groups reporting poor integration, and 22% saying DBAs are only involved when it came to deployment, it seems some teams still have a way to go before the database is fully embraced as part of the DevOps pipeline.

More interesting perhaps is the fact that, among the respondents who have no plans to adopt a DevOps approach at all, over 40% of them already report good or great working relationships between database development and operations teams. 22% of them are already working effectively as one team using standardized processes, even if they don't consider themselves to be using DevOps methodologies.

It's interesting to look at this information in relation to company size: there's a clear correlation showing that the larger the company, the less integrated developers are with DBAs, with 65% of companies with under 500 employees reporting 'good' or 'great' integration compared to just 48% of companies with over 500 employees.

4

Does your team include any developers that work across both databases and applications?

24% Our team has dedicated database developers

76% Our developers are responsible for both database and application development
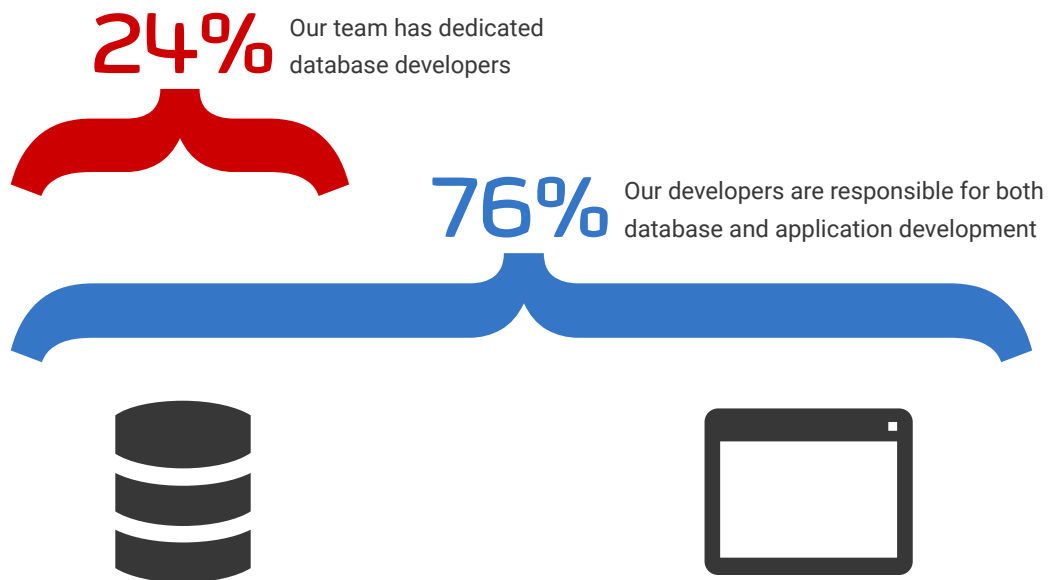
The overwhelming majority of teams contain developers who are responsible for both application and database changes and this percentage changes little when comparing responses between teams who had or hadn't already adopted a DevOps approach to their projects.

There is, however, a correlation between the size of a company and whether their developers work across both databases and applications: the larger a company, the less likely it is to have developers working across both disciplines.
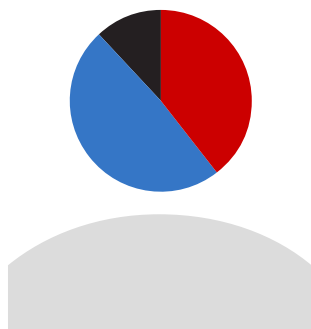
5 **Who typically builds database deployment scripts?***
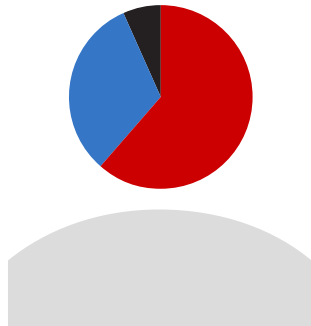
75% Developers

39% DBAs

8% Other

6 **Who is responsible for the deployment of database changes to production?***

47% Developers

58% DBAs

14% Other

* Respondents could give multiple responses to these questions

When it comes to the building of database deployment scripts, overall the large majority are built by developers with DBAs contributing to deployment script building in just 39% of organizations. Interestingly, compared to last year, there are more organizations where this work is shared across developers and DBAs.

Looking at who is responsible for deploying the scripts to production, developers are now handling deployments to production in almost half of organizations – a 20% increase from last year.

7

How frequently does your team deploy database changes, on average?

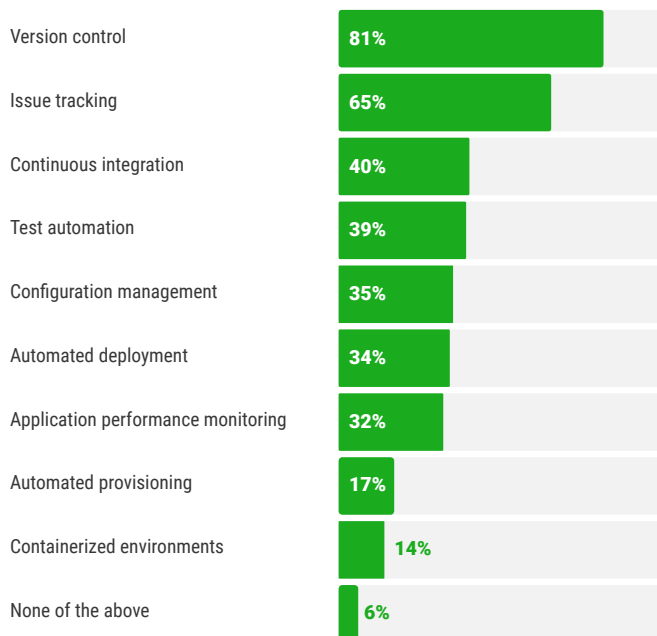| Category	Value
Daily	10%
More than once a week	25%
A couple of times a month	33%
Once a month	13%
A few times a year	14%
Once a year	2%
Other	3%
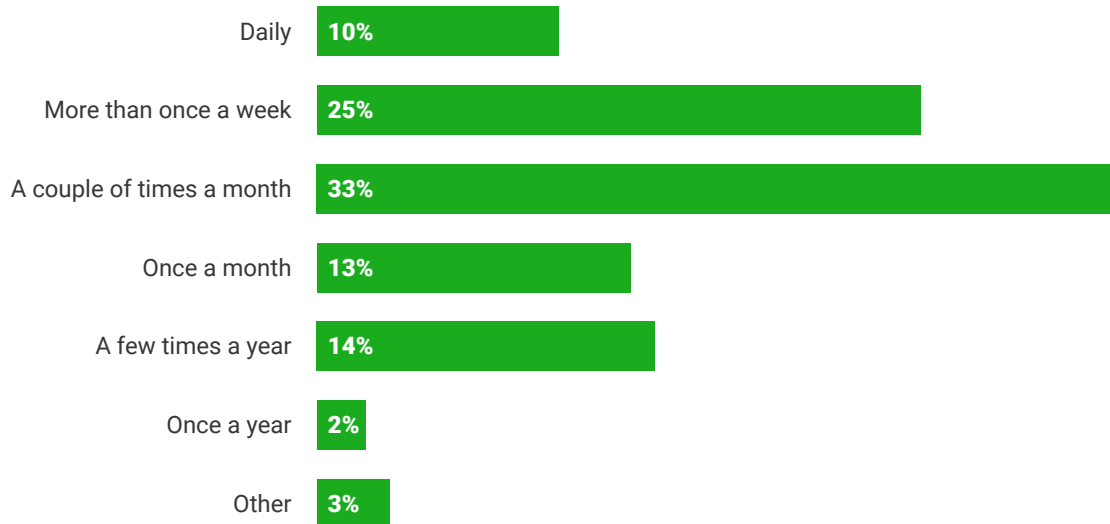
25% of respondents are deploying database changes either more than once a week or daily. In the group who had adopted DevOps practices across some or all of their projects, this figure rose to 38%, with 73% of them deploying at least twice a month, if not more.

Among those who had no plans to adopt DevOps practices, the proportion who release at least twice a month was only 54%. This may indicate that this group are facing less pressure to shorten the release cycle, which as we see in the answers to question 16 is the most common driver.
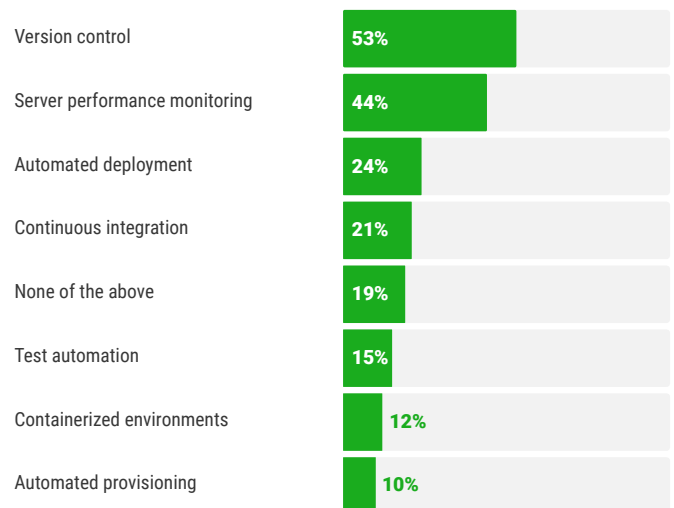
8 Which, if any, of these practices are already in place for your application development:

Version control	81%
Issue tracking	65%
Continuous integration	40%
Test automation	39%
Configuration management	35%
Automated deployment	34%
Application performance monitoring	32%
Automated provisioning	17%
Containerized environments	14%
None of the above	6%

9 Which, if any, of these practices are already in place for your database development:

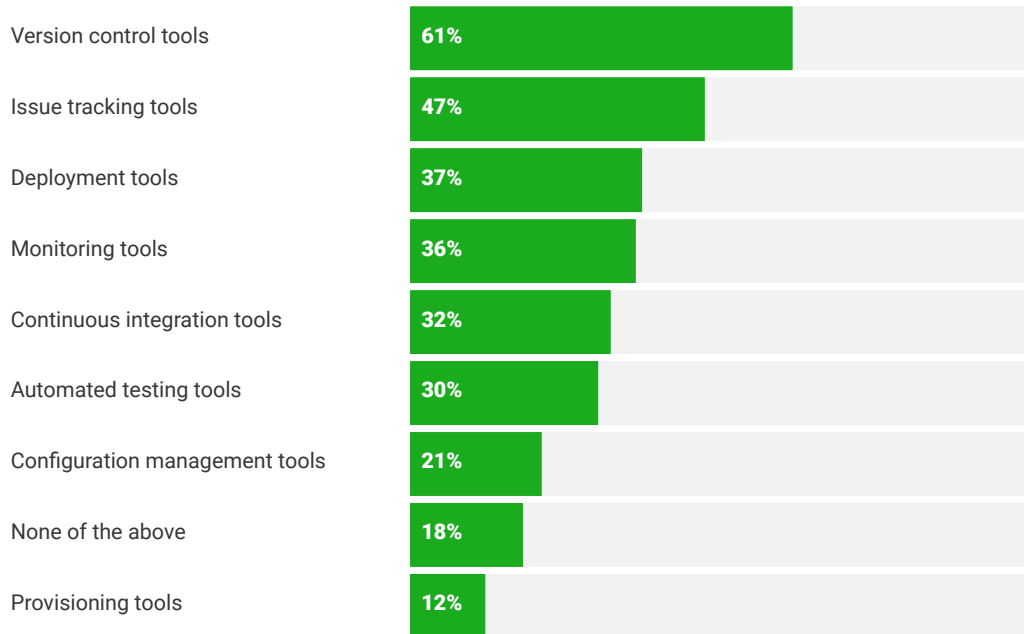|	
Version control	53%
Server performance monitoring	44%
Automated deployment	24%
Continuous integration	21%
None of the above	19%
Test automation	15%
Containerized environments	12%
Automated provisioning	10%

Use of version control is high, particularly as expected in application development with 81% of respondents versioning their code. The numbers who use database version control are significantly lower at 53% but still form the majority.

As expected of organizations who have already adopted a DevOps approach for some or all of their projects the majority are doing issue tracking, continuous integration, test automation and automated deployment for their application code.

Applying the same processes to database development is less common, carried out by approximately a third of respondents, even among the group who have already adopted some DevOps practices. This is, however, an increase from last year when, of those already adopting DevOps across some or all IT projects, only a fifth had practices such as continuous integration and automated deployments in place for database development. This suggests that those organizations adopting DevOps are increasingly applying it to the database too.
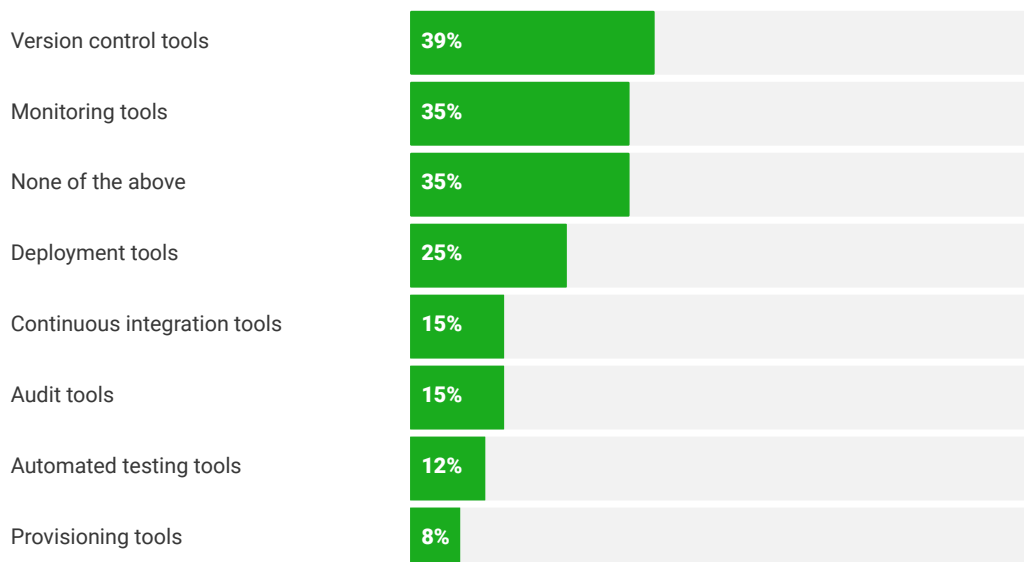
10   **Has your organization brought in third-party tooling to aid your application development in any of these areas:**
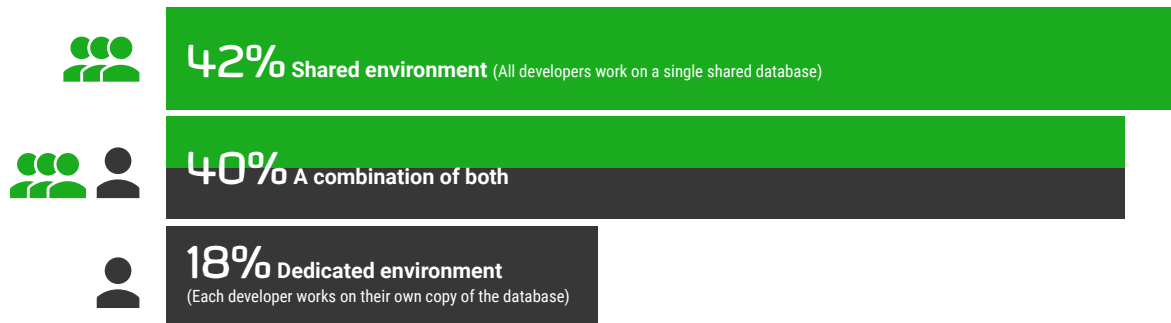
Tool	Percentage
Version control tools	61%
Issue tracking tools	47%
Deployment tools	37%
Monitoring tools	36%
Continuous integration tools	32%
Automated testing tools	30%
Configuration management tools	21%
None of the above	18%
Provisioning tools	12%

11   **Has your organization brought in third-party tooling to aid your database development in any of these areas:**

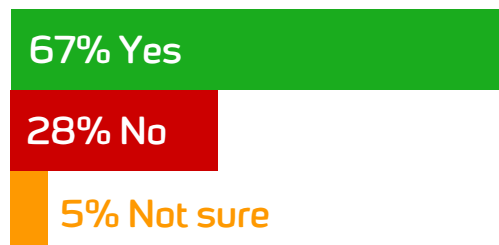| Tool	Percentage
Version control tools	39%
Monitoring tools	35%
None of the above	35%
Deployment tools	25%
Continuous integration tools	15%
Audit tools	15%
Automated testing tools	12%
Provisioning tools	8%

12 Is database development work done in a shared environment or dedicated environments?

42% Shared environment (All developers work on a single shared database)

40% A combination of both

18% Dedicated environment (Each developer works on their own copy of the database)

13 Do you use production data in your development, test or QA environments?

67% Yes

28% No

5% Not sure

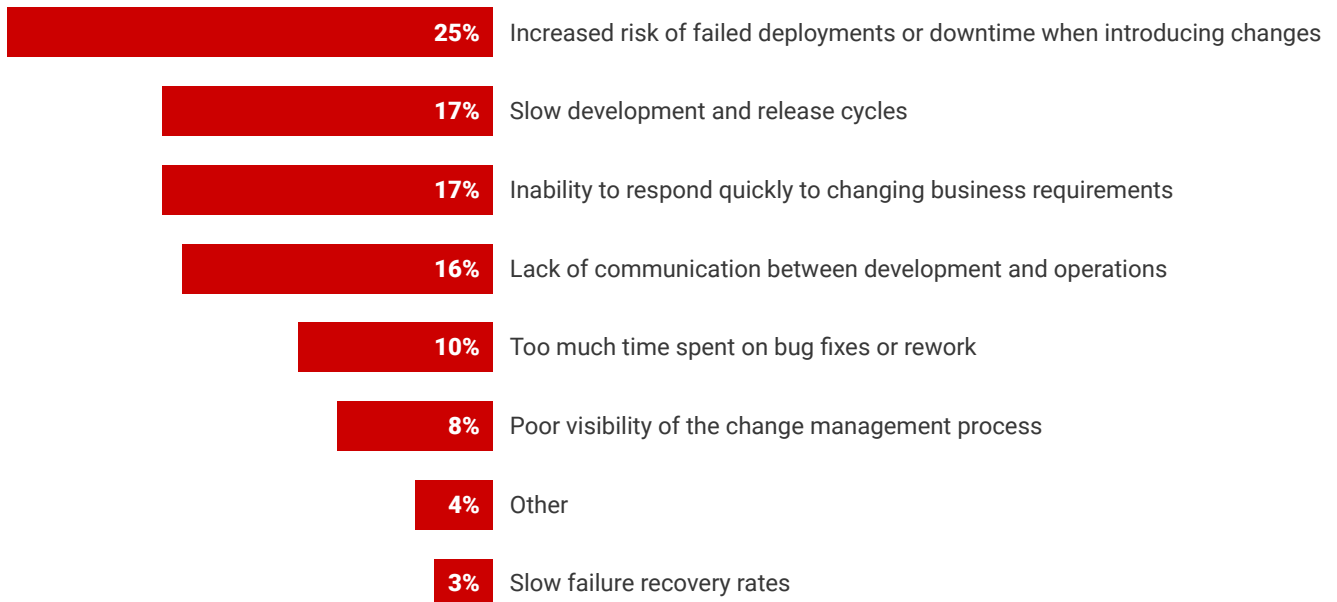**14** Would your production data need to be modified or masked before use in development, test or QA environments ?

57% Yes

33% No

10% Not sure
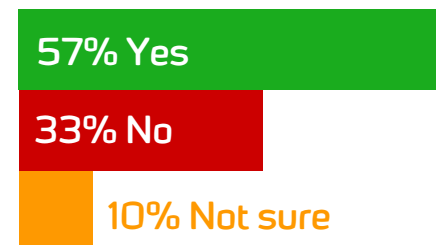
When it comes to using data in development, test or QA environments, 67% of respondents used a copy of production data, with at least 57% of respondents recognizing that their production data would need to be modified or masked before use in non-production environments. This clearly highlights concerns around data protection and compliance, and with 63% of respondents thinking that a DevOps approach to the database would have a positive impact on regulatory and compliance requirements, it's no surprise that DevOps adoption is gathering momentum.

15

Which of these do you consider to be the greatest drawback in traditional siloed database development practices?

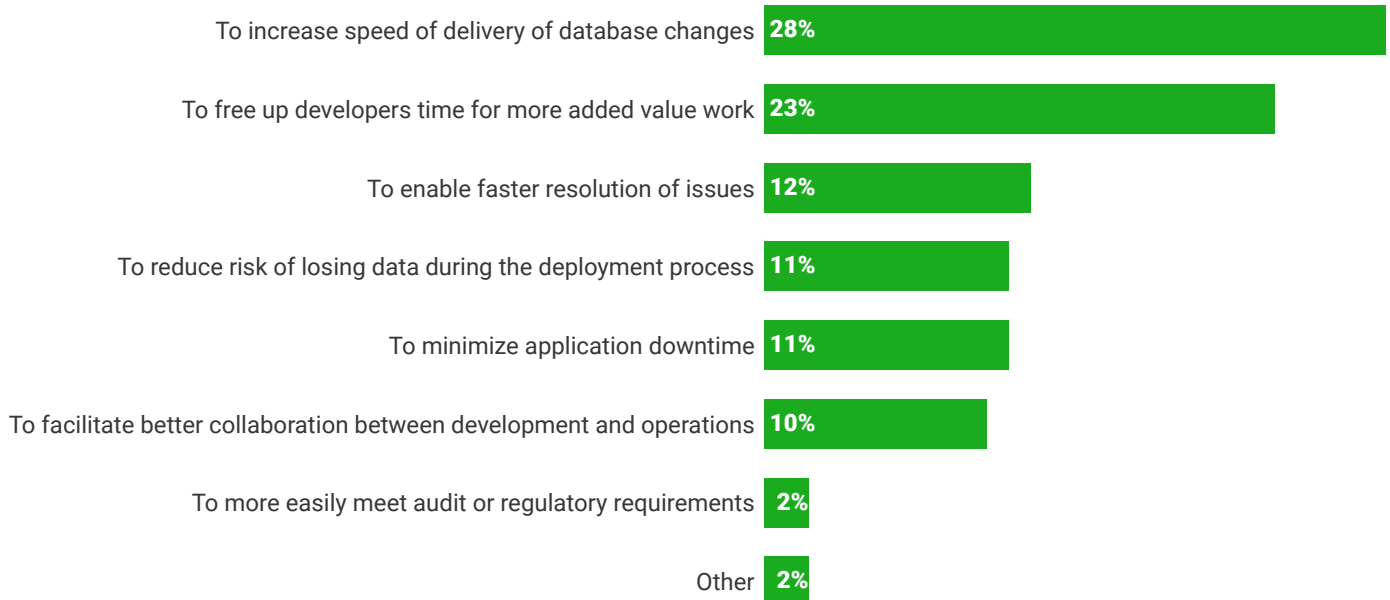|	
25%	Increased risk of failed deployments or downtime when introducing changes
17%	Slow development and release cycles
17%	Inability to respond quickly to changing business requirements
16%	Lack of communication between development and operations
10%	Too much time spent on bug fixes or rework
8%	Poor visibility of the change management process
4%	Other
3%	Slow failure recovery rates

There is little change from last year to the things people consider the greatest drawback with traditional siloed database development, with the top response still being the increased risk of failed deployments or downtime when introducing changes. Again, this is closely followed by slow development and release cycles, the inability to respond quickly to changing business requirements and poor communication between development and operations teams.

These are the top four drawbacks identified by all of the different groups of respondents, but the ordering of the top four answers varied across industries, seemingly reflecting the differing nature of the business. In Energy/Utilities and Government/Education/Non-Profit, the top answer was slow development and release cycles, whereas in Retail/Consumer Services and Media/Entertainment, increased risk of failed deployments or downtime when introducing changes is a much greater drawback.

16 Which of these would be the main driver for automating the delivery of database changes as part of a wider DevOps process?

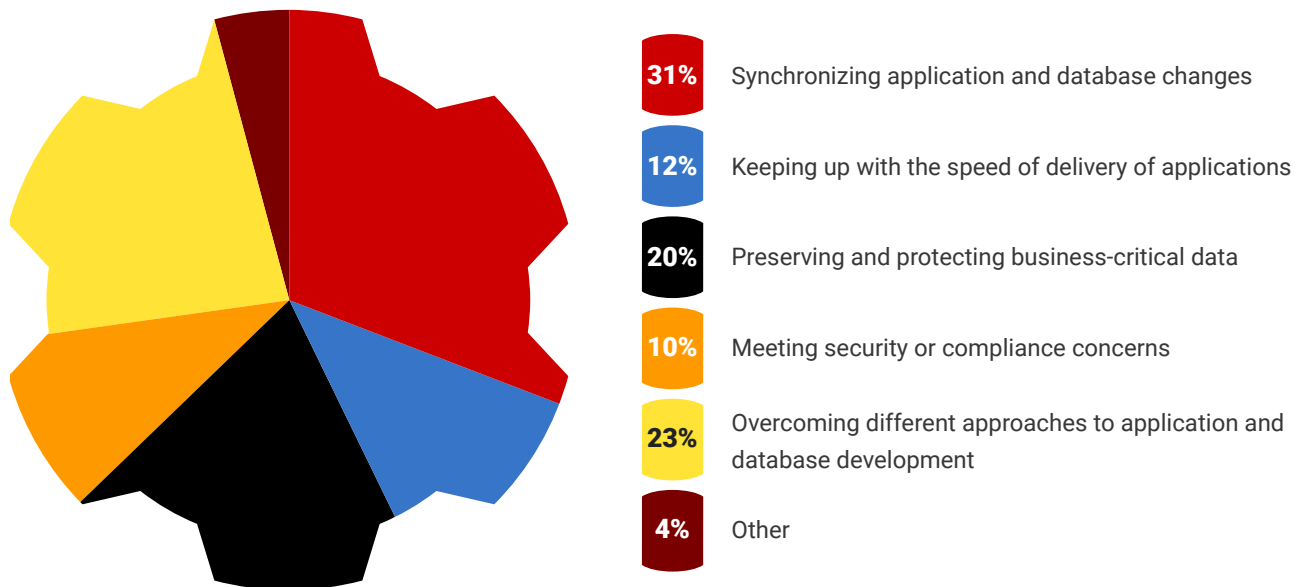|	
To increase speed of delivery of database changes	**28%**
To free up developers time for more added value work	**23%**
To enable faster resolution of issues	**12%**
To reduce risk of losing data during the deployment process	**11%**
To minimize application downtime	**11%**
To facilitate better collaboration between development and operations	**10%**
To more easily meet audit or regulatory requirements	**2%**
Other	**2%**

As we saw last year, increasing the speed of delivery of database changes is still the main driver overall for applying DevOps practices to database development. Of significance is the 30% increase in respondents stating that freeing up developer time for more added value work would be the main driver. This indicates a recognition that applying DevOps practices to database development would mean automating processes otherwise undertaken manually and taking a lot of time. With developer time freed up, their skills can be applied to delivering more value to the business. This is a strong indicator of growing recognition of the role that IT plays in delivering value to the buisness, rather than being just a service centre.

As to be expected, priorities differ according to role and level of seniority in the organization. Developers overwhelmingly want to be freed up to do more added value work while DBAs are driven by a desire to enable faster resolution of issues and minimize application downtime. IT Directors and C-level Executives consider the need to free up developers for more added value work equally as important as increasing the speed of delivery and the need to minimize application downtime.

17

What would you consider to be the greatest challenge in integrating database changes into a DevOps process?

31% Synchronizing application and database changes

12% Keeping up with the speed of delivery of applications

20% Preserving and protecting business-critical data

10% Meeting security or compliance concerns

23% Overcoming different approaches to application and database development

4% Other

The responses to this question show a remarkable consistency with last year's survey, suggesting that as more organizations adopt DevOps practices, the perceived challenges are playing out as expected.

Synchronizing application and databases changes and overcoming different approaches the teams have to development are still the answers most frequently cited across all groups of respondents.There is a slight increase in respondents identifying the need to preserve and protect business-critical data when adopting new processes, which suggests a growing focus on data privacy and protection procedures.
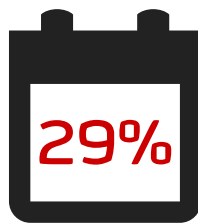
18 How long do you estimate it would take your organization to move from traditional database development practices to a fully automated process for deploying database changes?
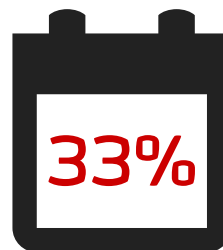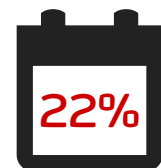
Less than 6 months	6 - 12 months	1 - 2 years	More than 2 years
16%	29%	33%	22%

There is a significant difference in the length of time estimated to move from traditional database development practices to a fully automated process for deploying database changes between the group who are already using DevOps processes and those who aren't and have no plans to, suggesting that once DevOps practices are understood and being used across some IT processes, extending them to the database is recognized as a shorter project than among those organizations not yet adopting DevOps at all.

60% of those who had adopted DevOps practices in some form already cite 0 to 12 months as the time it would take to move to a fully automated database development process, compared to just 15% of those who had no plans to adopt DevOps practices. In fact, 45% of this latter group cited more than two years as their estimate.

19 What impact do you think a DevOps approach to the database would have on regulatory and compliance requirements?

63%

A positive impact on regulatory and compliance requirements

30%

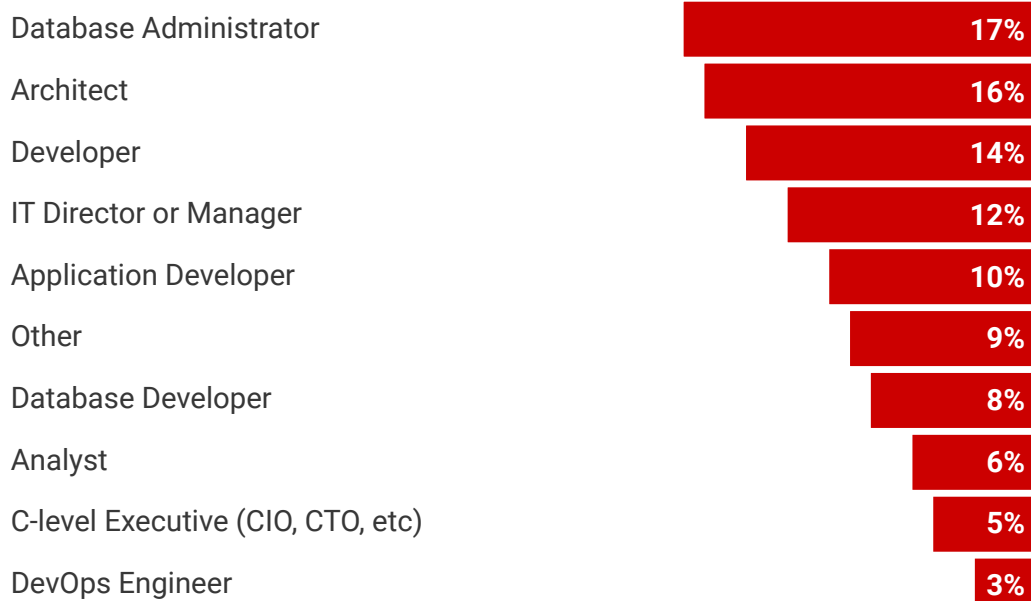**No impact** on regulatory and compliance requirements

7%

A negative impact on regulatory and compliance requirements

With increasing pressures around data privacy and protection for all organizations, it seems the majority of respondents recognize that database DevOps can be a foundation for data compliance. 63% think a DevOps approach to the database would have a positive impact on regulatory and compliance requirements. As expected, this rises in organizations operating in more regulated environments such as Healthcare/ Medical/Pharma, Financial Services/Insurance, and IT Services/Consulting.
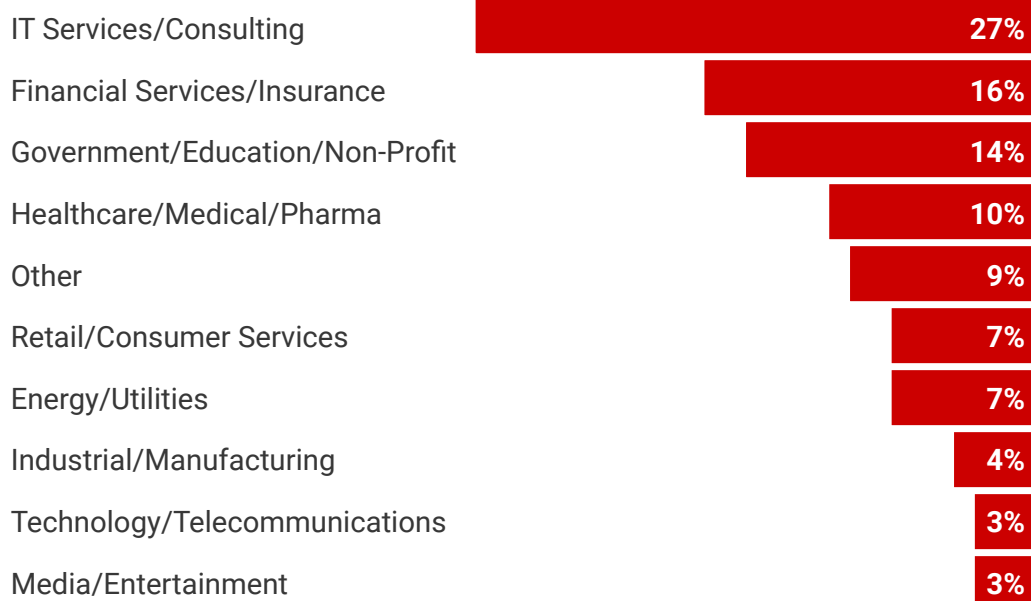
Interestingly, the percentage also varies significantly between those who have already adopted a DevOps approach for some or all of their projects (69%), and those who have not and have no plans to (38%). This strongly suggests that organizations that implement DevOps practices are finding DevOps to be good for compliance.
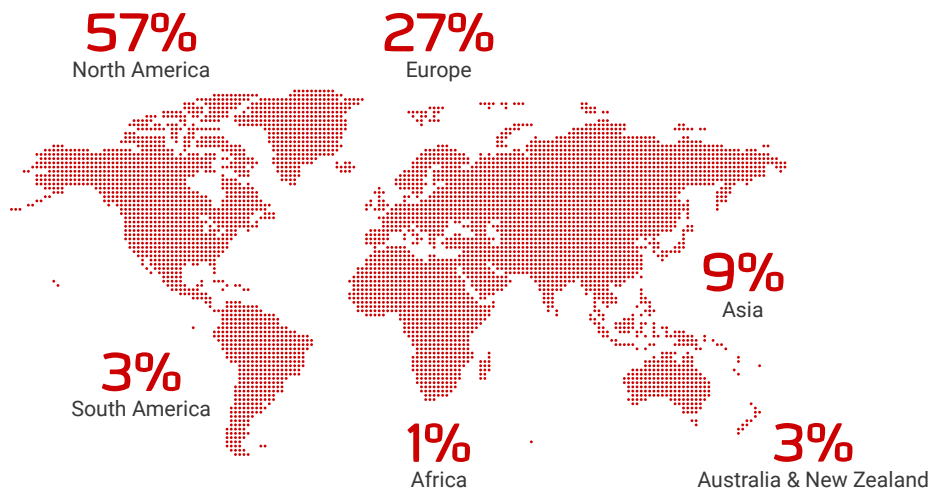
Survey Demographics

20 **What is your primary job title?**

Database Administrator	17%
Architect	16%
Developer	14%
IT Director or Manager	12%
Application Developer	10%
Other	9%
Database Developer	8%
Analyst	6%
C-level Executive (CIO, CTO, etc)	5%
DevOps Engineer	3%

21 **What is your organization's primary industry classification?**

IT Services/Consulting	27%
Financial Services/Insurance	16%
Government/Education/Non-Profit	14%
Healthcare/Medical/Pharma	10%
Other	9%
Retail/Consumer Services	7%
Energy/Utilities	7%
Industrial/Manufacturing	4%
Technology/Telecommunications	3%
Media/Entertainment	3%

22 **What region are you based in?**

57%
North America

27%
Europe

9%
Asia

3%
South America

1%
Africa

3%
Australia & New Zealand

23 **Approximately how many employees are in your organization (across all locations)?**

👤	%
1 - 25	17
26 - 100	11
101 - 500	22
501 - 1000	11
1001 - 5000	18
5001 - 10,000	6
10,000+	14
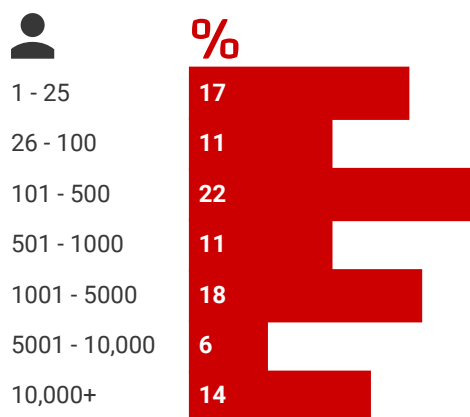
24 **Approximately how many of those employees are responsible for IT development, engineering or operations?**

👤	%
1 - 10	28
11 - 50	26
51 - 250	23
251 - 500	7
501 - 1000	5
1000+	11
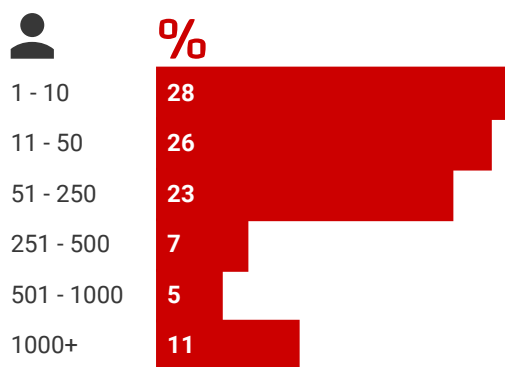
To learn more about how Redgate can help your organization to extend DevOps practices to SQL Server databases please visit www.red-gate.com/devops