

## CloudBolt Industry Insights Report:

# The Truth About DevOps in the Hybrid Cloud Journey

## Setting the Stage:

CloudBolt Industry Insights (CII) was created to provide a different type of research to make educated decision-making easy for enterprise C-suite, IT admins, and developers. CII is dedicated to getting beyond the hype and rapidly finding out exactly what the market perceives about the many dimensions of hybrid cloud and their roles in digital transformation. The goal is to provide timely, usable insights and truth that get beyond the exuberance.

In the conversations about hybrid cloud, ITOps is squarely central. However, DevOps is playing an increasingly important role in hybrid cloud strategies and accelerating digital transformation. And the growing interplay between Developers and ITOps is increasingly vital.

As the subtitle of this study implies, this report digs into the truth about DevOps. Specifically, we set out to examine the realities and market perceptions surrounding two key (and rapidly-evolving) DevOps processes and tools:

- Continuous integration/continuous delivery (CI/CD)
- Infrastructure-as-Code (IaC), particularly focused on HashiCorp's Terraform solution, a rapidly growing company in IaC

## Key Takeaways:

Leveraging Pulse Research's proprietary platform and audience between May 7 and June 10, 2021, CloudBolt secured 200+ responses from senior titles (74% VP+) at large companies (>1,000 employees) around the world who had specific knowledge of IaC and CI/CD within

their organizations. They answered a series of 17 questions. Here are some of the most informative insights:

- 1** Despite all the tools, process improvements, and investments made, only 4% of companies consider themselves experts in CI/CD.
- 2** While the promise of CI/CD is to enable applications to be deployed multiple times a day, only 5% of companies are actually doing that – the time to deploy a single CI/CD pipeline for 69% of respondents is days or weeks.
- 3** While 97% agree that being able to test CI/CD infrastructure integrity is vital, and 85% say that they do in fact perform infrastructure testing, *only 11% consider their CI/CD infrastructure very reliable.*
- 4** Within IaC, there's a lot of interest in Terraform. The truth, however, is that very few companies are using it to actually deploy a majority of their infrastructure (only 2% deploy 75% or more of their infrastructure using Terraform).
- 5** Furthermore, only 5% said they were “very satisfied” with using Terraform. Top challenges expressed include difficulty in on-prem infrastructure deployments, lack of day-2 management for deployed resources, and governance around its usage.
- 6** Most companies that use Terraform also must augment it with a Cloud Management Platform (CMP) and other tools to better manage the lifecycle of their cloud infrastructure.
- 7** 90% of respondents say Terraform drives up the need for custom integrations with other tools and technologies.

Now that we have the headlines out of the way, let's dig into the data.

# Continuous Integration / Continuous Delivery: The Operative Word Is Continuous

If the last year and a half has proved anything, it's that agility is a critical trait of any modern

organization. Even before the pandemic, agility was a core tenet of digital transformation as organizations and their leaders looked to make their businesses more responsive to rapidly changing customer needs and market demands.

IT operations have responded accordingly, adopting DevOps practices to develop and deliver IT services more quickly and more efficiently – without sacrificing quality. Practices such as CI/CD have gained traction to help developers rapidly deliver code changes via an automated pipeline.

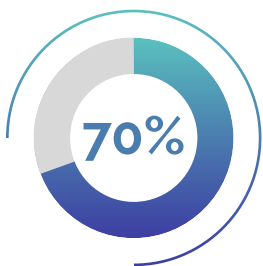
A successful CI/CD pipeline requires high levels of automation and a flexible infrastructure. That's why more development teams are adopting IaC. While not the only option, companies are using it to speed up IT resource management and provisioning (more on that in the next section).

## The Wait For CI/CD Maturity

CI/CD has evolved to the point where it is now widely accepted as the optimal approach for modern application development and deployment. Even though the concepts behind CI/CD have been around for decades, most organizations are still early on their journey - 76% of organizations say their CI/CD maturity level is intermediate. Only 4% consider their maturity level "expert" (with most of those being at the largest enterprises).

## Long Time Versus Real Time

The original vision for CI/CD was for applications to be deployed "continuously and automatically." The reality is far from that promise. Only 5% of companies surveyed indicated they deploy applications multiple times daily. Most companies (85%) admit to deploying on a weekly or even monthly basis. So why the disconnect?



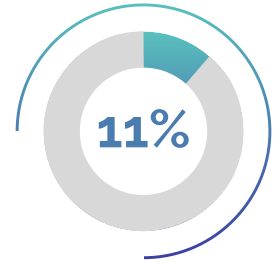
CI/CD pipelines remains less than instantaneous or continuous, with **70% saying that pipeline deployment on average takes days/weeks/or longer!**

But why are the pipelines and related infrastructure taking so long to deploy?

# “We Love CI/CD... We Just Can’t Completely Rely On It... Yet”

A key issue is CI/CD infrastructure reliability. Failure in the infrastructure across any related dimension of compute, storage, and networking causes an entire CI pipeline to fail and the whole process must start over from the beginning. This creates an inordinate amount of waste (time, processing, resources, et al).

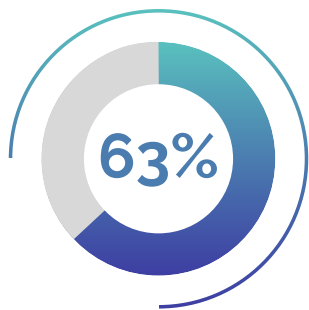
And while 97% of respondents agree that testing CI/CD infrastructure is important and 85% claim to regularly test that infrastructure, **only 11% of companies actually believe their CI/CD infrastructure is very reliable.** 69% characterize it as only somewhat reliable, and fully 21% say theirs is somewhat unreliable or not reliable at all.



So, what stands in the way of truly reliable CI/CD infrastructure?

Respondents point to a variety of issues, but they primarily boil down to three major factors – lack of automation, lack of consistency, and lack of proactivity.

## CI/CD Challenges Are Real (and Plentiful)



When asked, **63% say there are too many manual processes involved when setting pipeline infrastructure.** Additionally, 56% say there are no automated processes for post-deployment activities (scaling or destroying environments). 55% point to difficulty in creating consistent CI/CD pipeline environments across various development teams, and 53% acknowledge that it is challenging to proactively detect infrastructure issues (such as software version, security patches, and passwords during testing) in their CI/CD environments. These

challenges slow down a process designed to automate and speed up application delivery, many times creating friction between Developers and ITOps teams.

# The Roadmap to Better CI/CD

When asked about key ways to improve CI/CD pipeline reliability, respondents gave clear direction:

- Make provisioning infrastructure faster through automated processes (70%)
- Continuously detect infrastructure issues to reduce testing challenges & failures (62%)
- Simplify remediation of infrastructure issues proactively (56%)

It is only through creating better speed, awareness, and repairs that CI/CD can finally live up to its promise.

## IaC/Terraform: Still Struggling to Reach Full Potential

First conceived more than 25 years ago, IaC is not a new concept. At its heart, it is designed to enable the modeling of infrastructure with code, empowering developers to design, implement, and deploy application infrastructure with known software best practices. The ability to treat infrastructure like code and use the same tools as any other software project ostensibly allows developers to rapidly deploy applications.

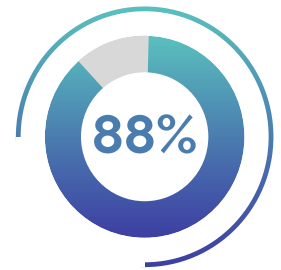
An emerging vendor in IaC is HashiCorp's Terraform, which was introduced in 2015 and has rapidly grown a base of ardent users.

Terraform's co-founder and CTO recently called one of their releases "a milestone...designed to deliver stability, scalability, and interoperability." He then asserted that "Terraform has emerged as the 'lingua franca' for infrastructure."

While an interesting and thought-provoking statement, CII data uncovered a different story regarding Terraform in the context of hybrid cloud infrastructure management.

# FOMO Factor

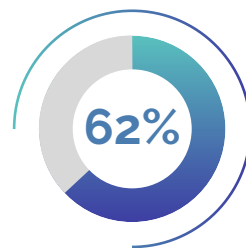
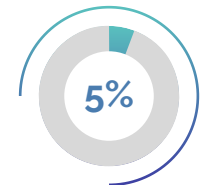
It's obvious that Terraform has the industry's attention – and no one wants to miss out on a potentially revolutionary trend. **Fully 88% of respondents indicate that they are either using or considering using Terraform.** That's massive market penetration in relatively short order. And companies are using Terraform to deploy infrastructure across IT (66%), Engineers (67%), and DevOps (68%) with the majority using Terraform Cloud (79%) for their initiatives and 58% using open source Terraform.



But what's really going on underneath the exuberance?

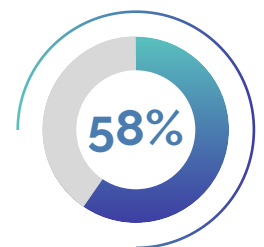
## Can't Get No Satisfaction

One would think with people flocking to Terraform, there would be a high degree of satisfaction with how it delivers IaC. To the contrary, **only 5% are truly satisfied.** 75% are only 'Somewhat Satisfied'.



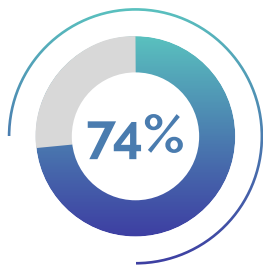
There are still significant issues that need to be addressed. **62% of respondents indicate that deployment of on-premises infrastructure via Terraform is challenging,** especially in meeting the need to integrate to multiple providers (e.g., for IP address management, load balancing, etc.) and maintain multiple Terraform files. Moreover, 90% state Terraform requires more custom-coded integrations to other critical tools and systems to work properly.

In addition, respondents mentioned broad governance-related challenges. For instance, 58% cite a lack of cost visibility into infrastructure deployed by Terraform as a key shortcoming. 53% call out the lack of visibility of who is using Terraform, while 42% of respondents say that they have a fear of ungoverned Terraform plans being executed by other teams.



Finally, skillsets are another challenge, with 39% pointing out they lack the specific and necessary Terraform expertise.

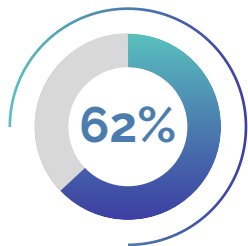
# It Takes A Village



When asked what they use for managing the lifecycle of their cloud infrastructures, the vast majority indicated that Terraform alone is not the answer. 74% state that they need a Cloud Management Platform (CMP) operating in conjunction with Terraform. 58% use DevOps tools like CI/CD or Kubernetes. 56% require configuration management tools like Ansible or Chef. And 51% said scripts.

## Roadmap To Success: Simplicity + Governance + Visualization / Optimization + Integration

Clearly, Terraform is here to stay and will remain a force. Respondents' answers provide a crystalized roadmap for what it will take for Terraform (or any other provider) to evolve where it needs to be to more holistically meet the emerging needs of hybrid cloud management.



**Three capabilities tied for the top spot at 62%:**

- Enable non-Terraform experts to easily deploy infrastructure using Terraform
- Ensure only Terraform plans with IT "guardrails" are executed
- Visualize and cost optimize infrastructure deployed by Terraform

Finally, 35% want to simplify deployment of on-premises infrastructure when using Terraform, which is about simpler integrations to existing tools and technologies.

# The Bottom Line

Based on the findings of CloudBolt Industry Insights research, it's clear the truth about the state of DevOps is still evolving as Developers and ITOps struggle to find reliable common ground and contribute more fully in the New Cloud Order. Gaps in reliability, interoperability, testing, governance, ease of use, integration, and visibility combine to stymie efforts to advance CI/CD and leverage IaC for competitive advantage. While progress is being made for DevOps, CII data proves much improvement is still necessary before reality matches exuberance and hype lives up to promise.

To learn more about the New Cloud Order and CloudBolt's role in advancing Hybrid Cloud, please visit [www.cloudbolt.io](http://www.cloudbolt.io), contact us at [info@cloudbolt.io](mailto:info@cloudbolt.io), or call us at +1 (703) 665-1060.

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CloudBolt Software is the enterprise cloud management leader. Our comprehensive solutions for IT automation, orchestration, self-service IT, cost optimization, and security help enterprises simplify complexity and achieve rapid time-to-value anywhere on their hybrid cloud, multicloud journey. Our award-winning cloud management platform and infrastructure integration services are deployed and loved by enterprises worldwide. Backed by Insight Partners, CloudBolt Software has been named one of the fastest-growing private companies on the Deloitte Fast 500 and Inc. 5000 lists. In addition, CloudBolt is 2020 CODiE award winner for best cloud management and featured in Gartner's Magic Quadrant for Cloud Management Platforms.

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JOIN THE CONVERSATION

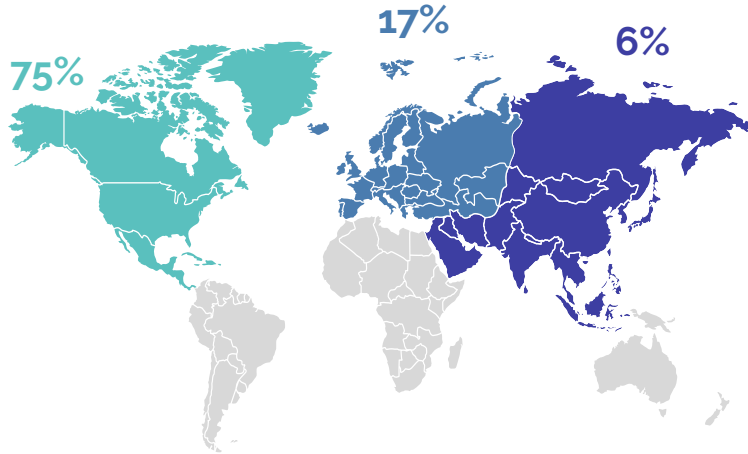




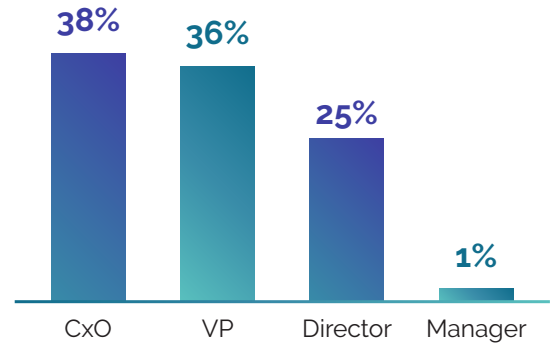
# Appendix:

## Methodology

### REGION



### ROLE IN ORGANIZATION



### COMPANY SIZE

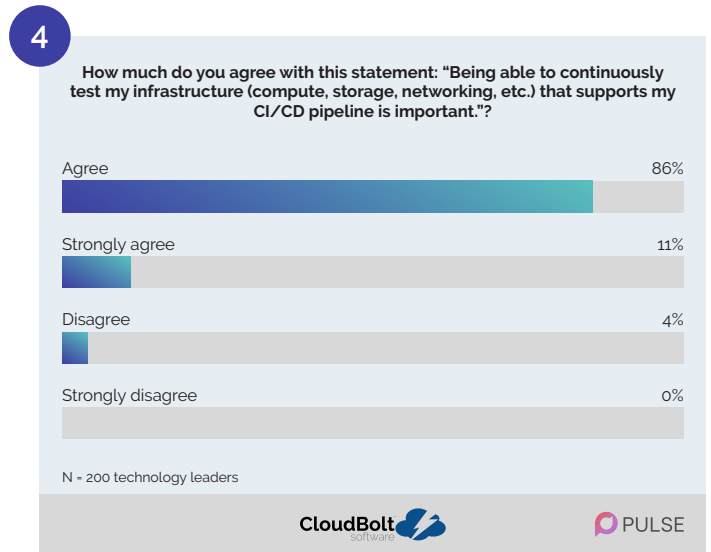
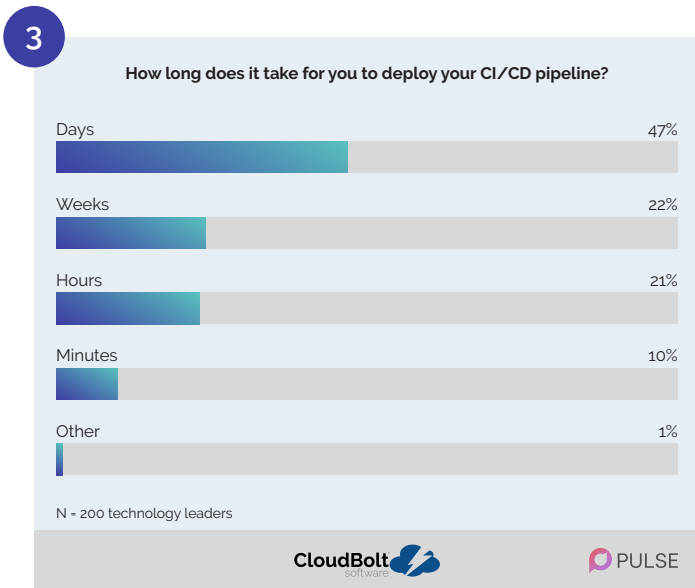
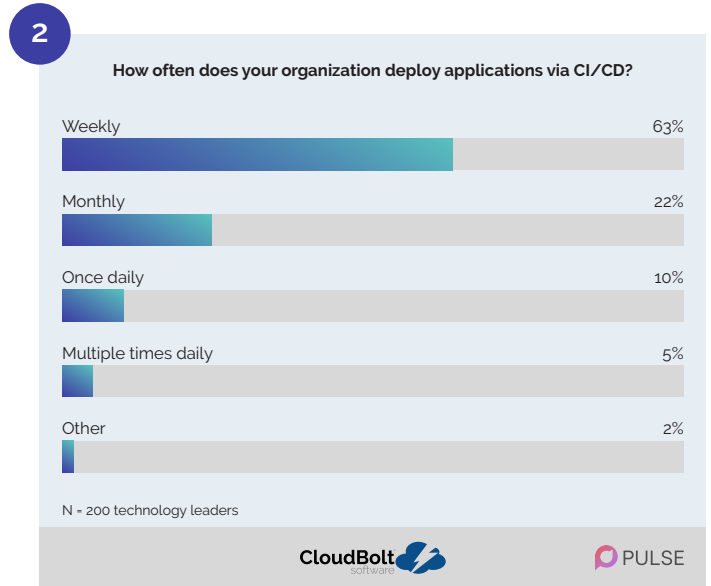
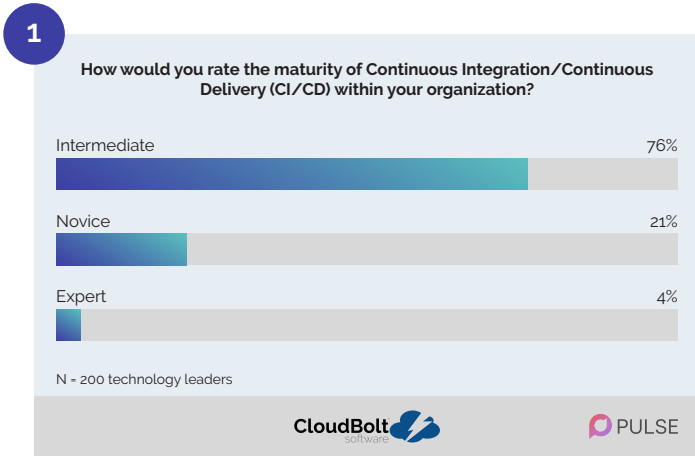


> 1000 employees

### RESPONDENT BREAKDOWN

200 Respondents

# Survey Data:



5

Does your organization continuously test the infrastructure (e.g., compute, storage, networking, etc.) supporting its CI/CD pipeline?

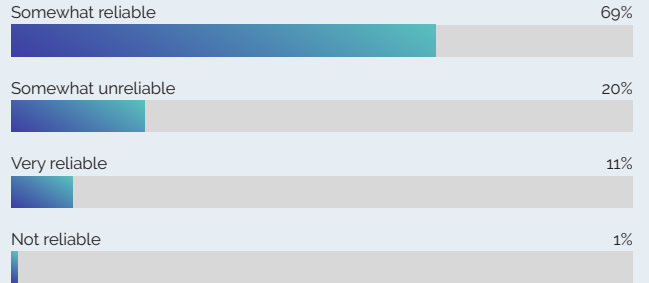


N - 200 technology leaders



6

How would you characterize the reliability of the infrastructure (e.g., compute, storage, networking, etc.) that supports your CI/CD pipeline?

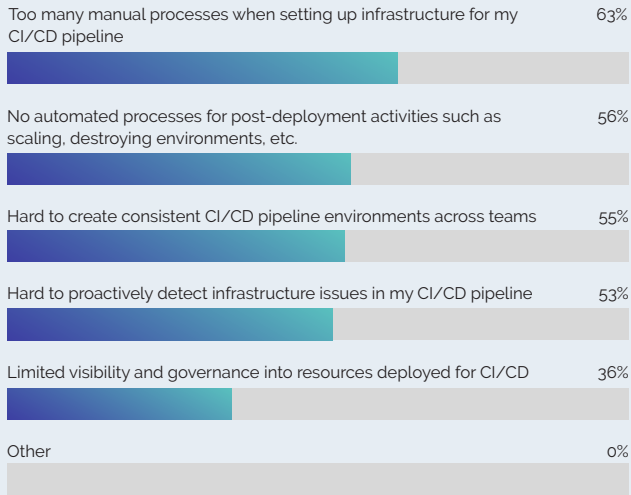


N - 200 technology leaders



7

What are the top challenges your organization faces relating to CI/CD pipeline reliability? (Select all that apply)

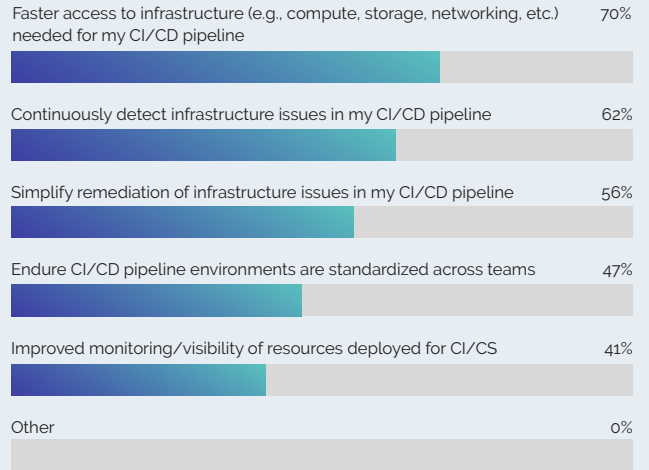


N - 200 technology leaders



8

If you could improve your organization's CI/CD pipeline reliability, which of the following improvements would you like to see? (Select all that apply)

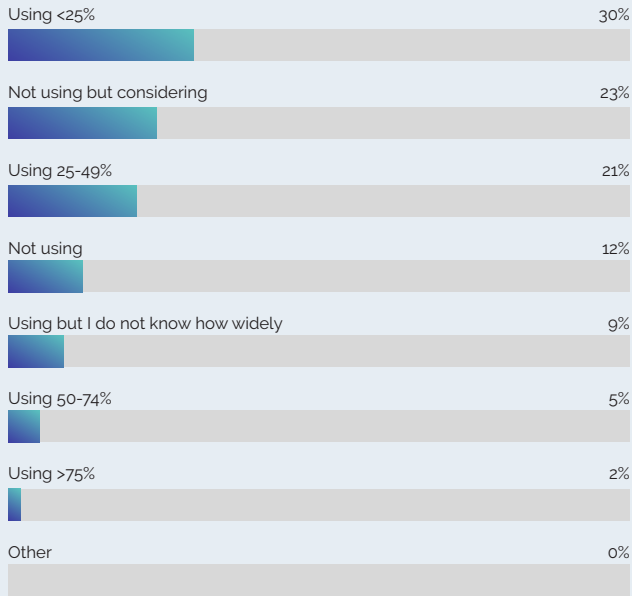


N - 200 technology leaders



9

Is Terraform used in your organization to deploy infrastructure?

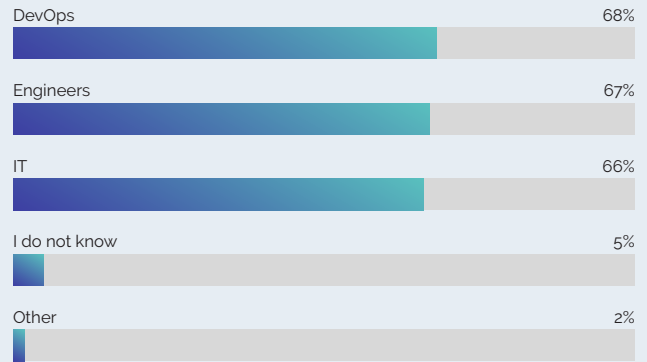


N - 200 technology leaders



10

Which teams are using Terraform to deploy infrastructure today? (Select all that apply)

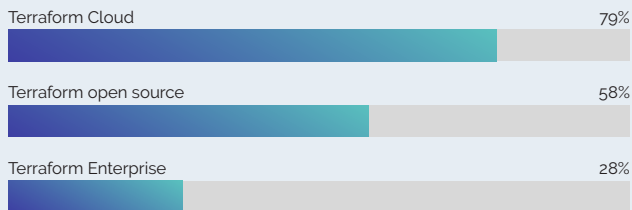


N - 200 technology leaders



11

What versions of Terraform do you use in your organization? (Select all that apply)

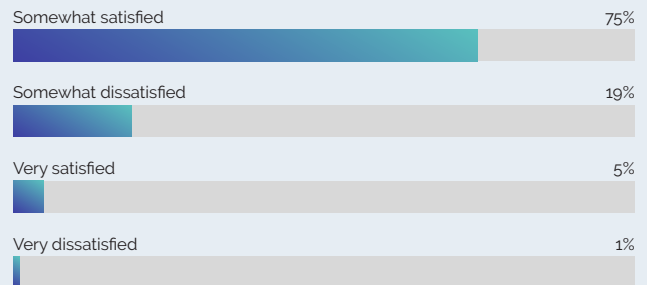


N - 130 technology leaders



12

How satisfied are you with Terraform usage at your organization?

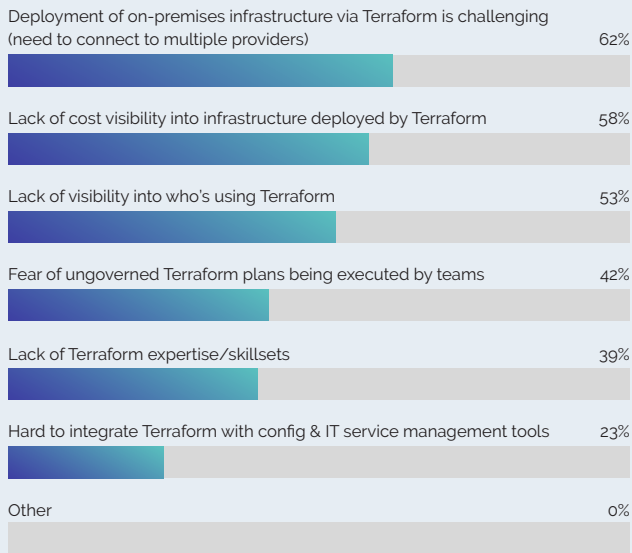


N - 130 technology leaders



13

**What challenges does your organization face when using Terraform to deploy infrastructure? (Select all that apply)**

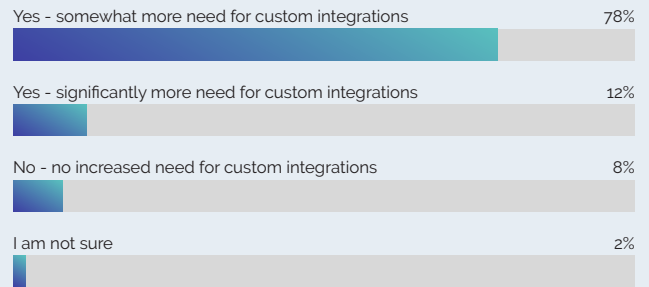


N = 130 technology leaders



14

**Does the use of Terraform drive up the need for custom integrations to other critical tools and systems?**

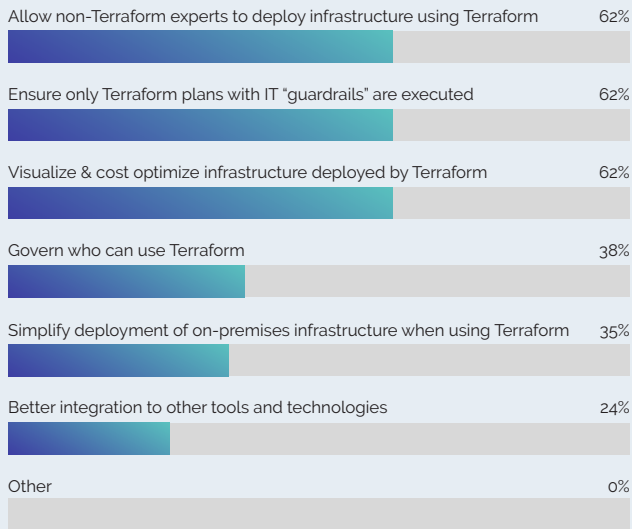


N = 130 technology leaders



15

**How would you like to improve your Terraform experience? (Select all that apply)**

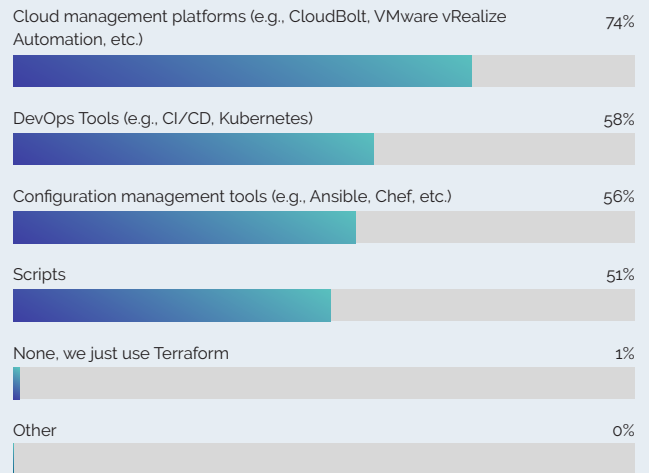


N = 130 technology leaders



16

**What other tools do you use most commonly with Terraform to manage the lifecycle of your cloud infrastructure? (Select all that apply.)**



N = 130 technology leaders



17

Are you knowledgeable about Infrastructure as Code (IaC) usage at your organization?



N - 200 technology leaders

