



# The State of Observability 2021

Presented by VMware

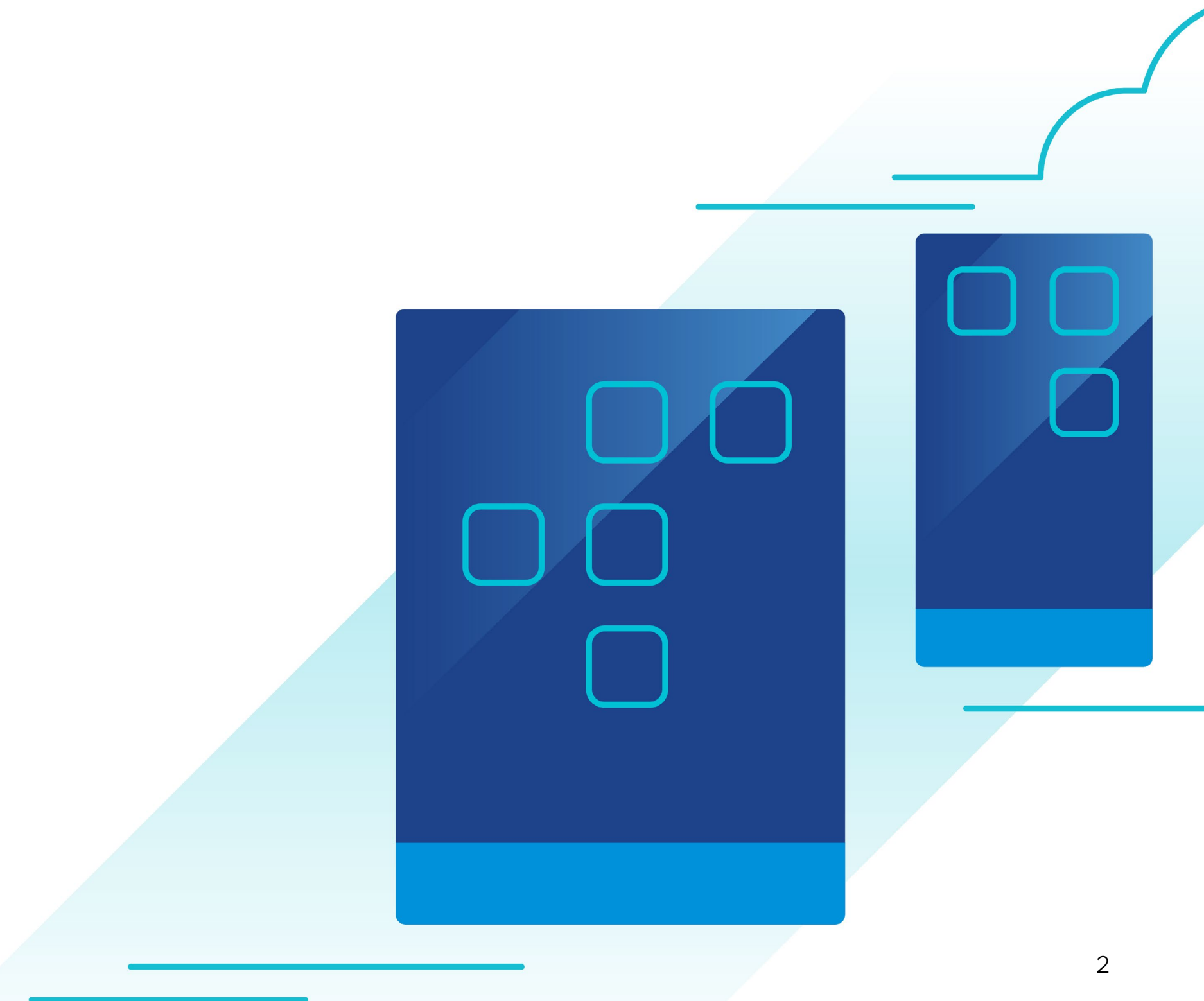
Analysis based on the survey  
conducted by Dimensional Research





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# Introduction

With the constant rise in modern cloud applications’ complexity, the old ways of monitoring and managing applications have become inefficient with many visibility gaps. Telemetry that’s required for understanding how highly distributed cloud applications behave has grown exponentially. DevOps teams, SREs, and developers have started looking for new approaches to meet this requirement. The new solutions are not only about incident detection. They also have to include incident prediction and capabilities to explore how code changes impact the overall business. And that’s where observability comes into play.

Observability is a new way of getting insight into the performance of cloud environments based on analytics for a vast amount of telemetry data (metrics, traces, histograms, logs, events) collected from a diverse set of data sources—cloud applications and services, infrastructures, Kubernetes, etc. Observability combined with the DevOps culture of responsibility shared by multiple teams creates a powerful paradigm to tackle the hardest issues of today’s cloud applications. Furthermore, observability allows teams to uncover new business insights, which is essential in the era of cloud-native applications.

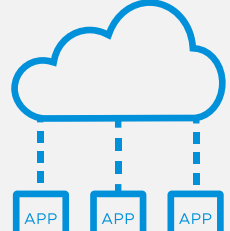
To uncover the current state of observability adoption, we conducted a survey of IT practitioners in January 2021. We wanted to understand the forces driving the deployment of observability tools, and what observability brings to DevOps teams challenged with delivering cloud applications. In this report, we summarize our findings.

This report consists of four sections:




**It's Early**

Enterprise adoption of observability is just starting. There's a huge interest in it.




**Modern Cloud Application Environments are Complex**

The applications are running across multi-cloud, microservices, containers, and teams.



**Traditional Monitoring Is Not Enough**

More complex applications environments drive a need for a different approach to get actionable insights.



**The Need for Observability**

Getting all insights from the cloud, despite the complexity, assures the proper functioning of the applications.

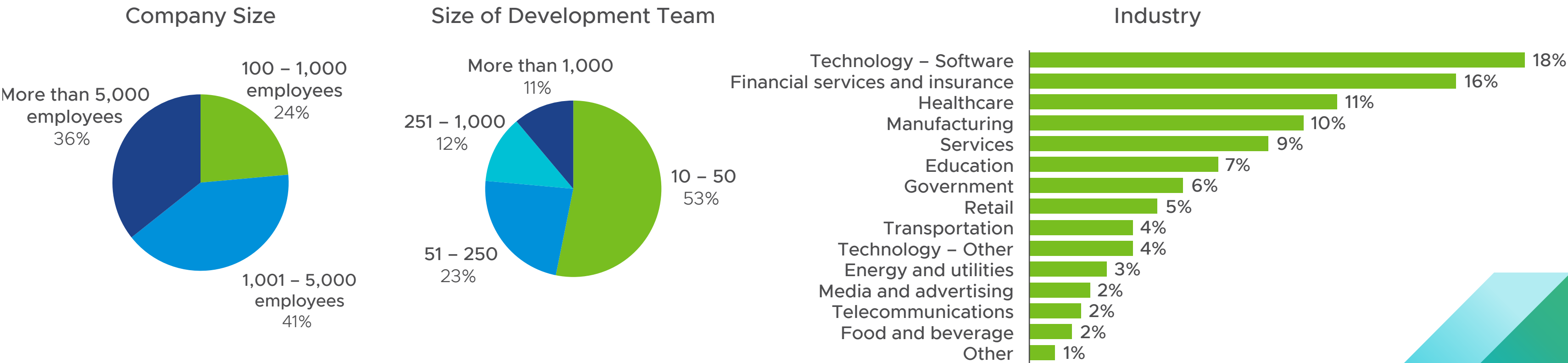
# Demographics

We surveyed 314 IT practitioners at organizations with more than 100 employees. 47% of organizations we surveyed have more than 50 developers. The participants were responsible for delivering mission-critical modern cloud applications. Their roles are DevOps Engineers, SREs, Cloud Architects, Application Delivery Engineers, Tools Engineers, and their managers.

The majority of surveyed professionals work in the financial, healthcare, technology, and manufacturing industries. Individual contributors represent 28% of those surveyed, while team managers represent 46%, and executives 26% of participants.

This was a global survey including IT professionals from different areas:

- 71% from North America
- 16% from EMEA
- 9% from APAC



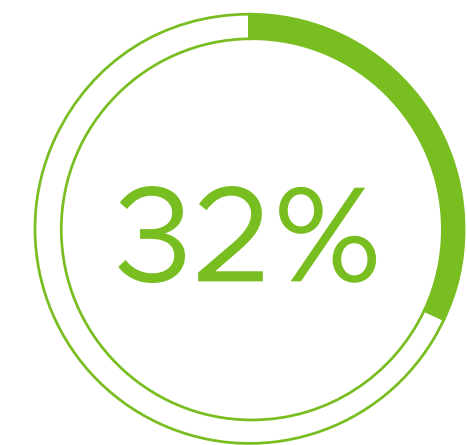


## It's Early

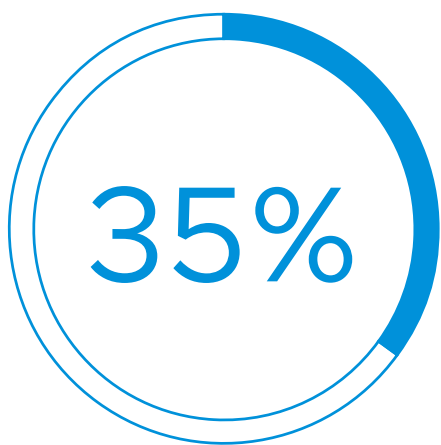
Most IT practitioners agree that it's early and they see the value in adopting observability for modern cloud application visibility. Only 16% of those surveyed are currently (Jan 2021) using observability tools. However, that is about to change. One third of the organizations we surveyed are either in production or in the evaluation stage of deploying observability to glean insights into the performance of their cloud applications.

Our research shows that a fragmented monitoring landscape across an organization results in limited insights into the performance of cloud applications. However, most responders are still using siloed traditional monitoring approaches for their containerized and polyglot applications. More than half of DevOps practitioners report that they spend unproductive time in war rooms trying to reconcile monitoring silos before moving to incident resolution. We found that majority of enterprises have traditional logging tools in production, while 52% use a specialized container or Kubernetes monitoring tools. Traditional Application Performance Monitoring (APM) tools are in use by 42% of participants.

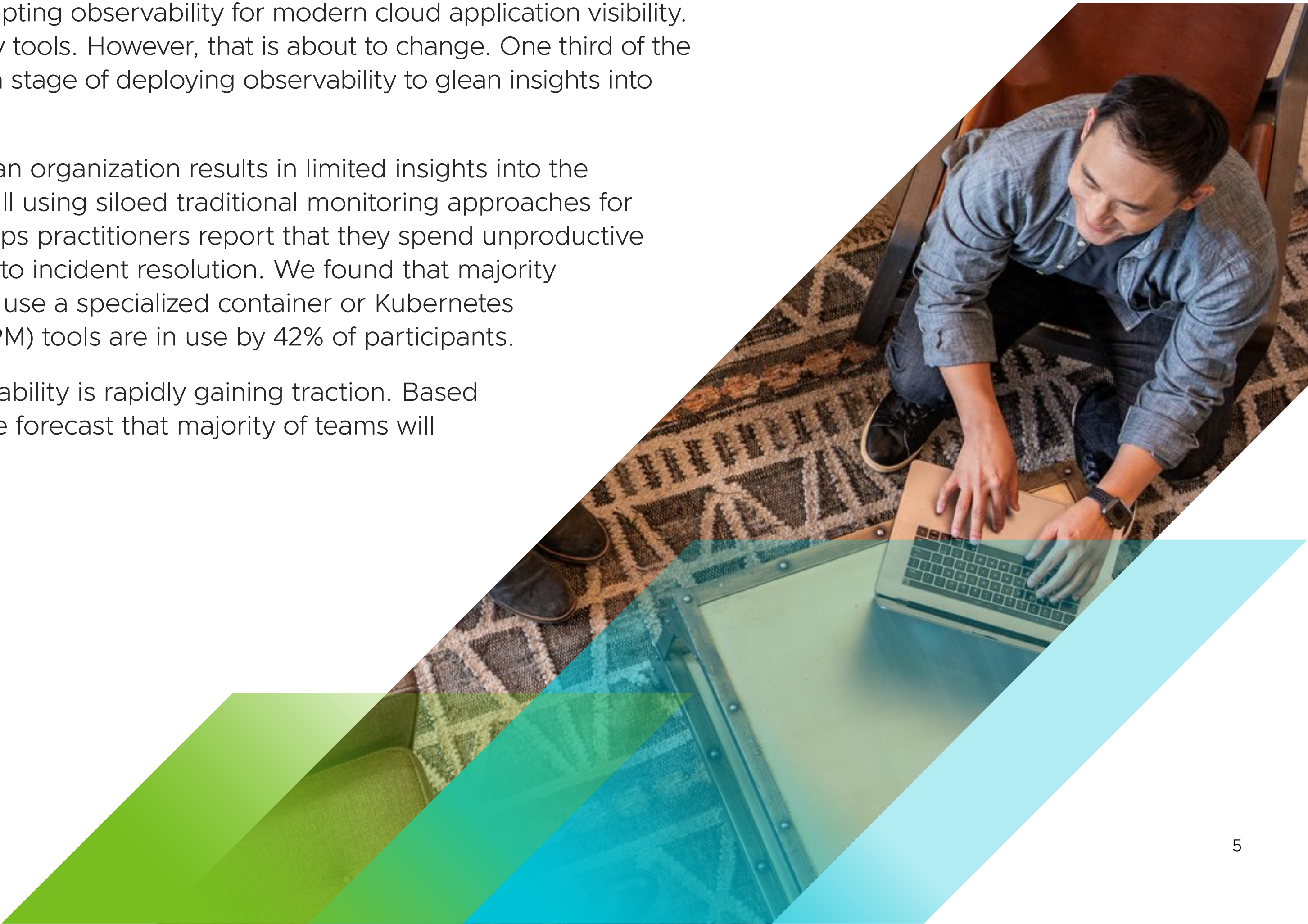
In summary, while it's early, the progressive cloud application observability is rapidly gaining traction. Based on the results of our survey, and in our own customer discussions, we forecast that majority of teams will soon adopt observability solutions.



Using or implementing  
observability solutions



Evaluating and planning to  
implement in the next 6 – 12 months

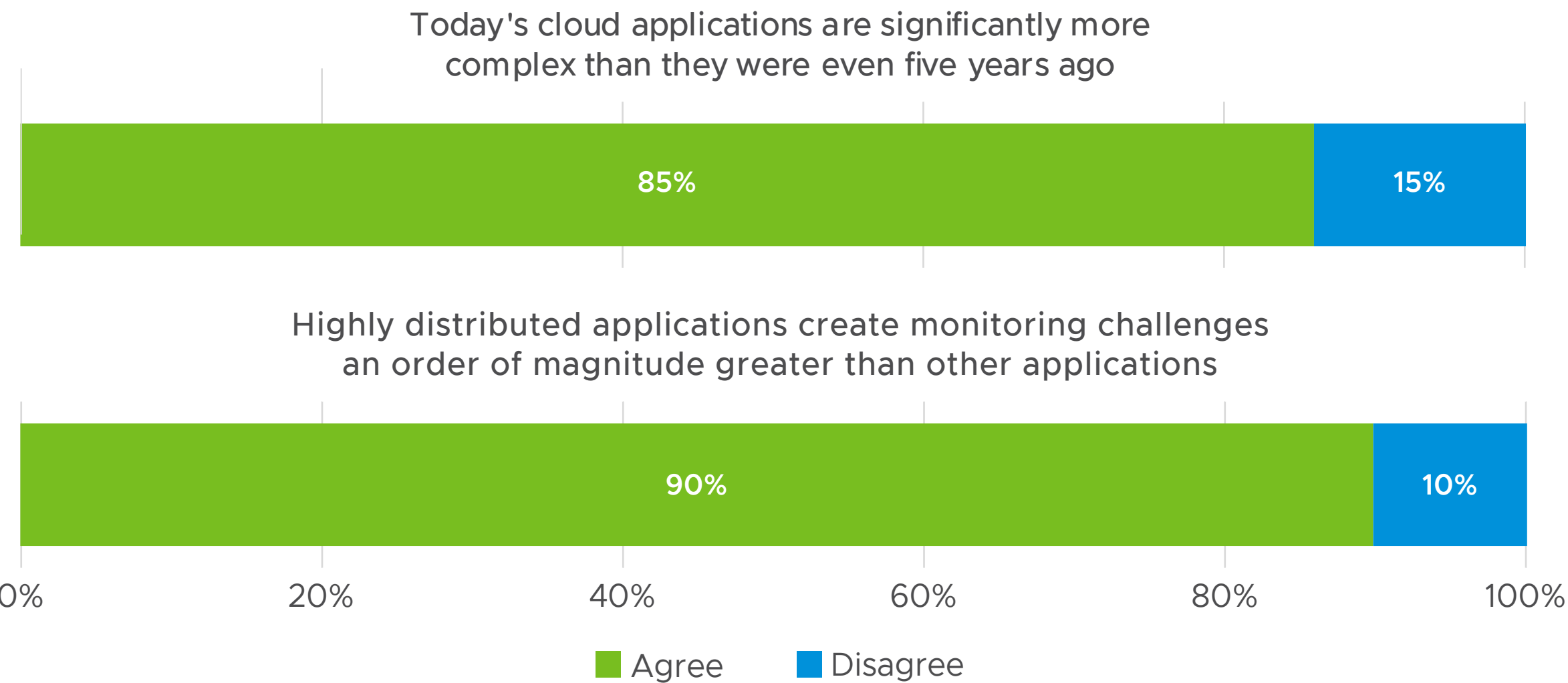




# Modern Cloud Application Environments are Complex

Managing and running modern cloud applications is complex. 86% of engineers surveyed report that cloud applications are significantly more complex than just five years ago. The reasons for the rising complexity of managing cloud applications include:

- Diverse hybrid and multi-cloud environments
- Cross-team adoption of polyglot microservices frameworks
- Application requests traversing many third-party APIs and technologies
- Rising frequency of code deployments shortening test and prod validation
- Varying approaches in application security across different vendors





## Scaling Cloud Applications Increases Complexity Even More

### Exploding scale of containers, microservices, and compute instances

84% of teams report that their cloud services and applications run across hundreds or often (43%) thousands of compute instances. We also found high use of modern architectures, such as containers and Kubernetes (used by 72% of participants) and microservices (used by 49% of participants). The majority of teams (83%) runs more than 100 container instances.

### Larger enterprises run even more containers and microservices, creating more cloud environments visibility challenges

We found that organizations with more than 250 developers use more containers and microservices than smaller companies. More than 1000 containers are used by 78% of companies with more than 250 developers. The percentage of these larger companies with more than 1000 microservices is 62%.

### Highly distributed applications create an order of magnitude larger monitoring challenges

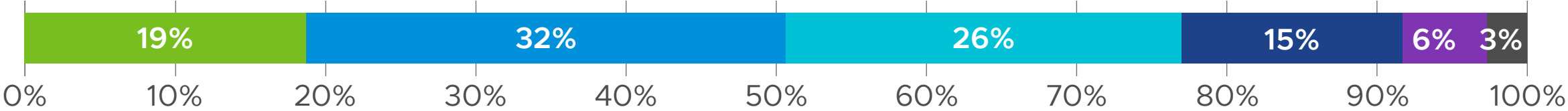
Cloud application requests often traverse dozens of different technologies. Environments with more containers or microservices have an even higher pass-through number. According to 90% of respondents, highly distributed applications create monitoring challenges an order of magnitude greater than more traditional applications.

### Frequent application releases require real-time observability at scale

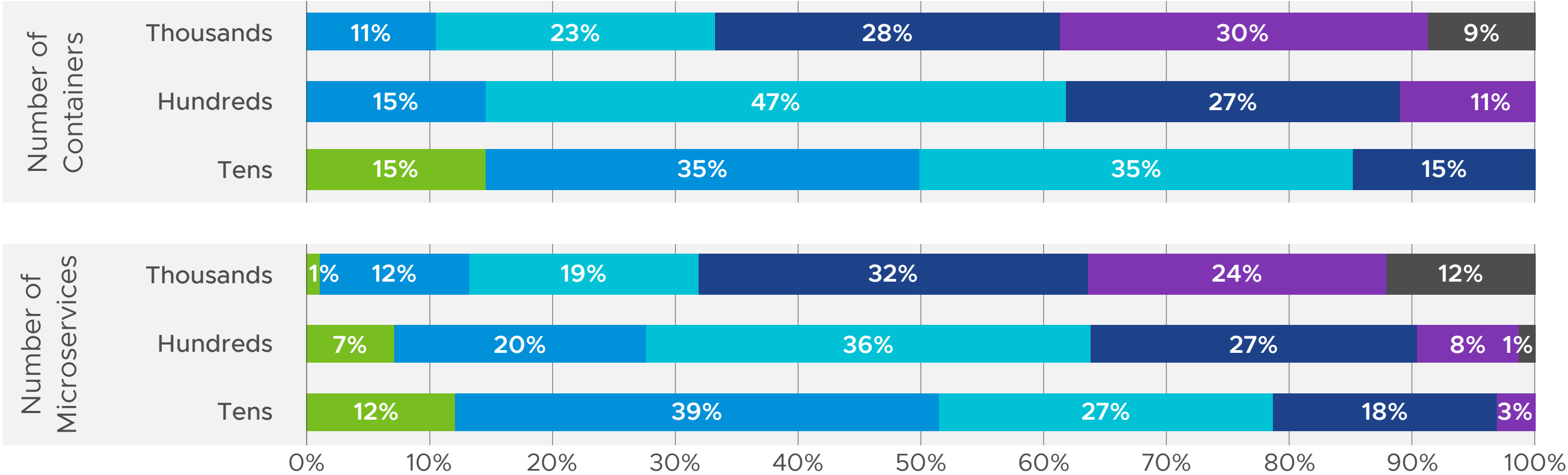
Automated CI/CD tooling shortens the release cycle but requires real-time visibility into test and prod. Half of the teams we surveyed make application updates at least weekly, with 23% updating daily.



Cloud application requests often pass through dozens of different technologies



Environments with more containers or microservices have an even higher number of technologies that application requests touch or pass through



- Fewer than 10
- 10 – 25
- 26 – 50
- 51 – 100
- 101 – 500
- More than 500



## Traditional Monitoring Is Not Enough

Our research confirms that IT teams face challenges when monitoring cloud applications.

- The vast majority (96%) of survey participants reported issues with their current approach.
- More than 80% of IT professionals surveyed agree that legacy monitoring tools aren't adequate for monitoring modern cloud applications.

This finding strengthened further because only 8% are “very satisfied” with their existing monitoring toolset.

**The top challenge reported is lack of unified visibility across key services slowing incident resolution.**

### Broader Team Visibility Yields Better Application Availability

We also found a strong consensus that better application availability would result if a broader team had unified visibility into application and infrastructure performance.

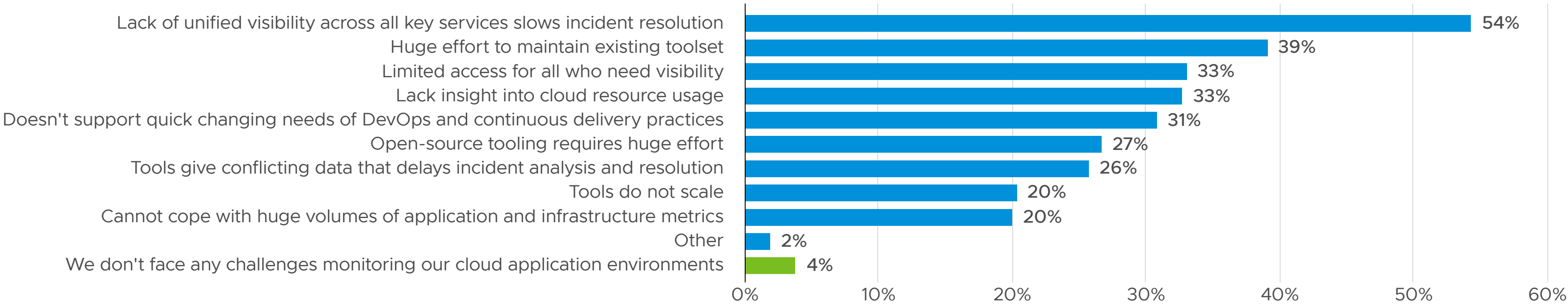
**Almost half of the teams that run more than 100 containers report that their existing monitoring tools do not scale.**

Only 1 in 5 respondents describe their current monitoring toolset as unified. Monitoring is even more disjointed for larger organizations that employ more than several hundred developers. To deal with disconnected visibility, almost 50% of respondents would like to consolidate monitoring tools across the organization. Another very popular approach, for DevOps teams, is to loosely integrate existing monitoring tools with the new tools. The least desirable approach is greenfield (“rip and replace”).

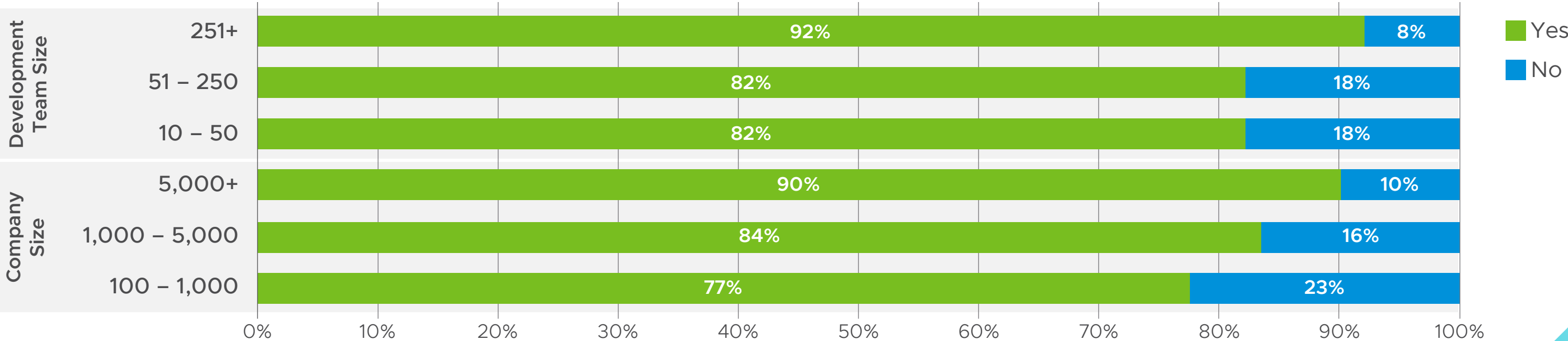
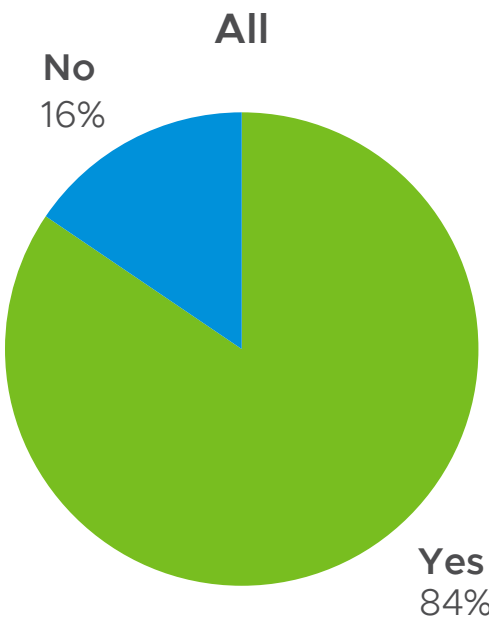




What challenges does your organization face with monitoring your company's current cloud application environments?



Would your cloud applications have better availability (and performance) if more stakeholders (DevOps teams—developers, SRE, etc.) had visibility into overall infrastructure and application performance metrics?





## The Need for Observability

While there are several definitions of observability in the industry, below is our definition, which we gave to survey participants.

Observability is an evolution of traditional monitoring for cloud applications that uses operational telemetry at a large scale. Telemetry is collected across highly distributed data sources coming from applications, application services, containers, and multi-cloud infrastructure. Analytics applied to observability output enables DevOps practitioners, SREs, and developers to ask any questions of their data, get important insights, and address unknown unknowns.

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“The best kind of infrastructure, and the best kind of application observability, is the one that helps incidents resolve themselves.”

DAVID BAYENDOR  
INFRASTRUCTURE TEAM  
ENGINEERING MANAGER  
*VMWARE CARBON BLACK*

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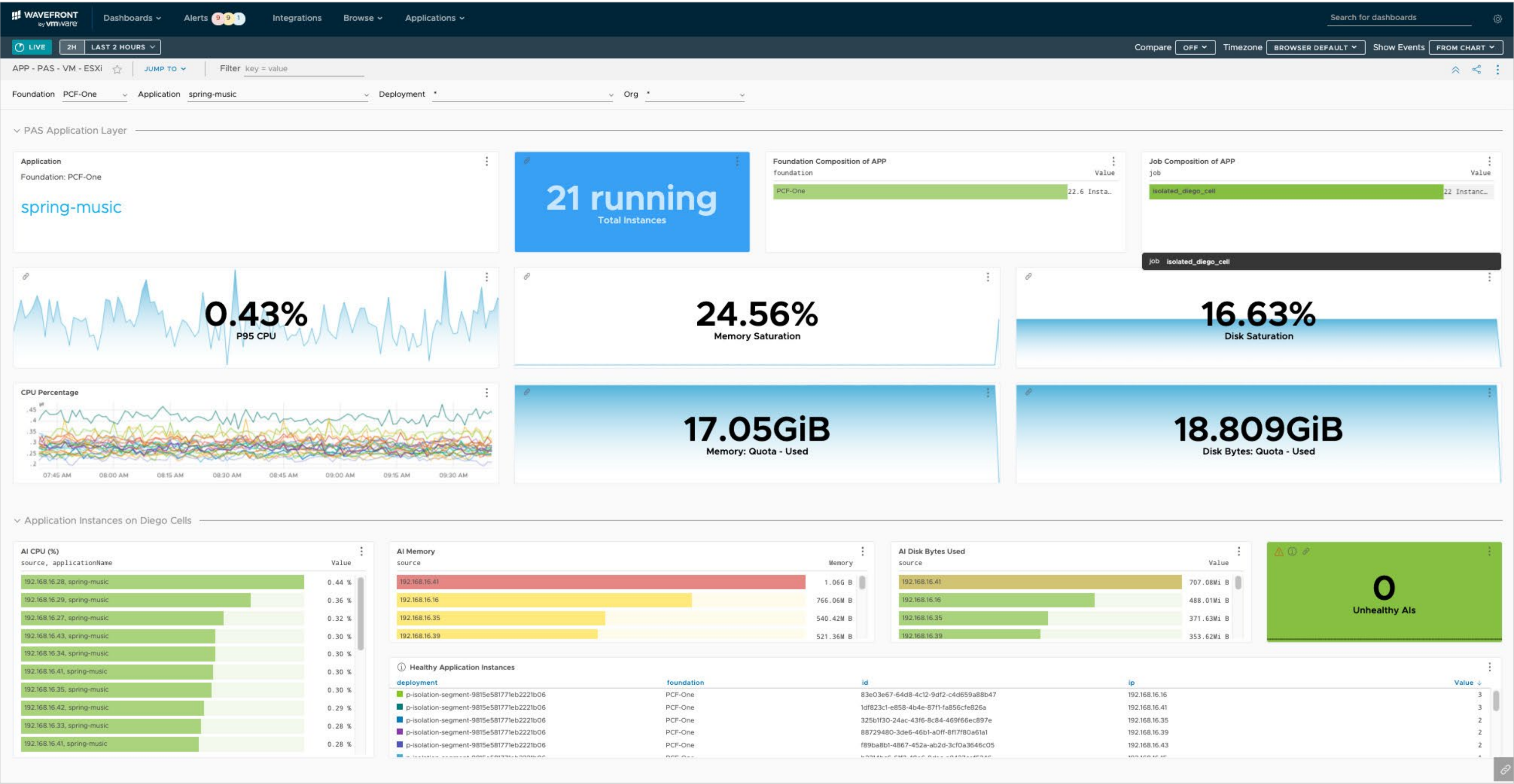
It's Early

Modern Cloud Application  
Environments are Complex

Traditional Monitoring  
Is Not Enough

The Need for Observability

Full-stack observability example

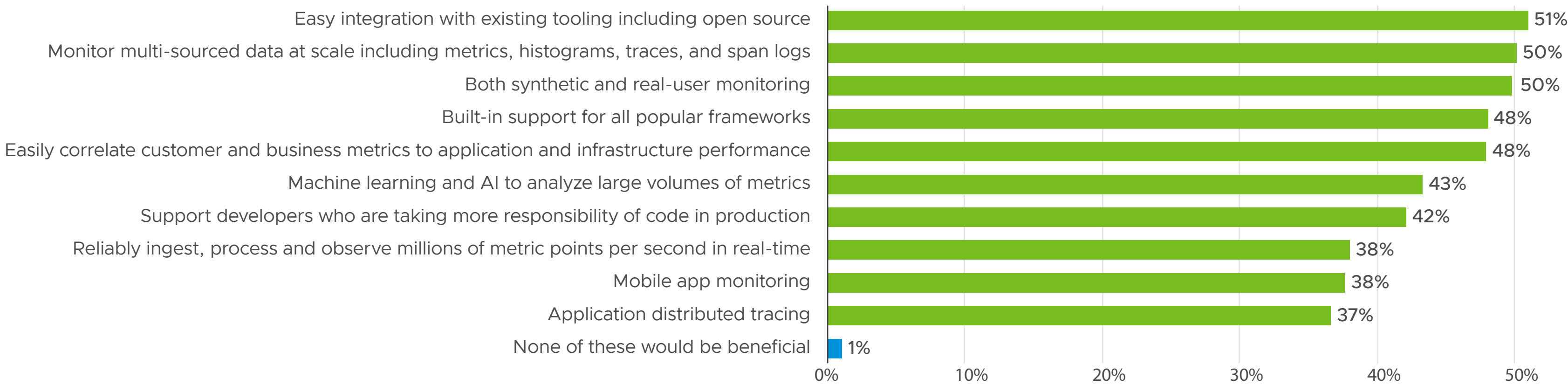




# The Most Valuable Observability Capabilities

IT stakeholders are in almost unanimous (99%) agreement in reporting that observability capabilities would benefit their organization. While it was expected that some observability aspects (such as ingest, visualize and analyze multi-sourced data at scale across metrics, traces, histograms, and more) are very popular, the value of integration with existing tooling is a very interesting finding. Observability platform must have well-defined APIs and offer a plethora of integrations. Real-user monitoring, also known as digital experience monitoring, is in the third place, probably due to the impact of Covid-19 on remote work. But again, survey results reflect the importance of user experience within digital enterprise.

99% report observability capabilities would benefit their organization



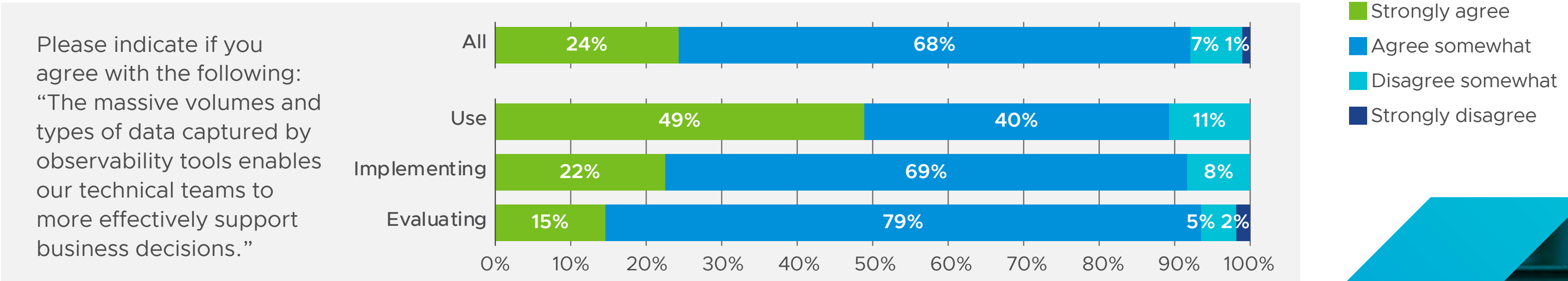
# Observability Drives Business Results

With the rise of a digital enterprise, the impact of observability on business results is crucial. Because observability solutions collect and analyze a vast amount of data from application environments, they empower DevOps practitioners, including SRE and platform teams, to help business stakeholders with essential insights. Observability helps executives and business stakeholders make data-driven business decisions.

For instance, a well-known ride-sharing service can understand their business better by relying on robust observability. In addition to observability being important to engineering, the ride-sharing company provides their business execs, including GMs and VPs, observability tools to know how their business is performing. The observability for them is pure gold, providing real-time and historical insight into the actual state of the business. For more about this, check out this [blog](#).

Based on our survey results, the confidence in observability's impact to drive business results grows as teams move from evaluating to using observability. That's not surprising because observability tools can show details of how the business performs at any point in time. Properties such as visibility into different levels of customer engagements and behaviors are eye-openers for every enterprise.

92% agree that observability drives better business decisions

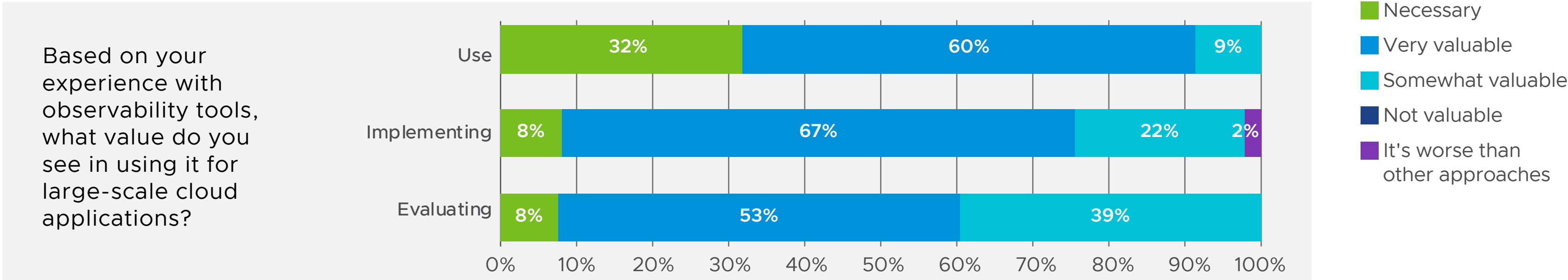




# Observability Value and Impact Grows with Usage

We have asked our survey participants to rate the value they see in observability tools for large-scale applications. Practitioners who use observability tools, are more inclined to see them as crucial for their businesses. Among those currently using observability tools, 92% consider them necessary or very valuable. It is a significant increase compared to survey participants who are evaluating observability tools. However, a majority (61%) of practitioners evaluating these tools find them necessary or very valuable for managing large-scale applications. This increase in the perceived value of observability is revealing. Even those still exploring the tools are confident that adoption is beneficial, while those already using them are mostly convinced that they made the right choice.

More experience with observability tools correlates to a higher perception of value



## Summary and Recommendations

Observability adoption is in the early stages but rapidly gaining popularity. DevOps, platform, SRE and development teams gain many benefits when adopting observability for understanding the performance of their cloud applications.

Compared to non-users, existing observability users are more likely (59%) to give their toolset a 4 or 5 rating on a scale of 1 to 5.

Is observability the right approach for you? Below are some of our recommendations based on the research we conducted.

- Evaluate the deployment of microservices, hybrid or multi-cloud infrastructures and Kubernetes for your cloud applications. Evaluate the complexity of managing them and the length of incidents.
- Think about scaling your cloud applications. Are you planning to have hundreds of containers in production?
- Review your tooling across teams and projects. Are you using disconnected and siloed tools? If so, review your current monitoring toolset across both operations and development teams, and look for opportunities to streamline and unify them.
- Are your teams pushing code to production frequently—weekly or daily?
- Do your DevOps teams need to provide business stakeholders with real-time cloud service insights (availability, customer growth/behavior, performance)?

If you answered 'yes' to any of the previous questions, then consider researching or evaluating observability solutions.

### Contact Us

[VMware Tanzu Observability](#) helped many [customers](#) reduce troubleshooting efforts and deliver data-driven business results. If you have any questions about Tanzu Observability or this report, please contact us at [tanzu-observability@vmware.com](mailto:tanzu-observability@vmware.com).







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