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S&P Global Market Intelligence

Monitoring

It's Time for a Change

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About this paper

A Black & White paper is a study based on primary research survey data that assesses the market dynamics of a key enterprise technology segment through the lens of the “on the ground” experience and opinions of real practitioners — what they are doing, and why they are doing it.

ABOUT THE AUTHOR



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Prior to joining 451 Research, Nancy was Editor in Chief of the enterprise IT publications at Fierce Markets. She launched the DevOps publication, setting the editorial direction for the new coverage area, and oversaw seven publications aimed at senior enterprise IT executives.

Executive Summary

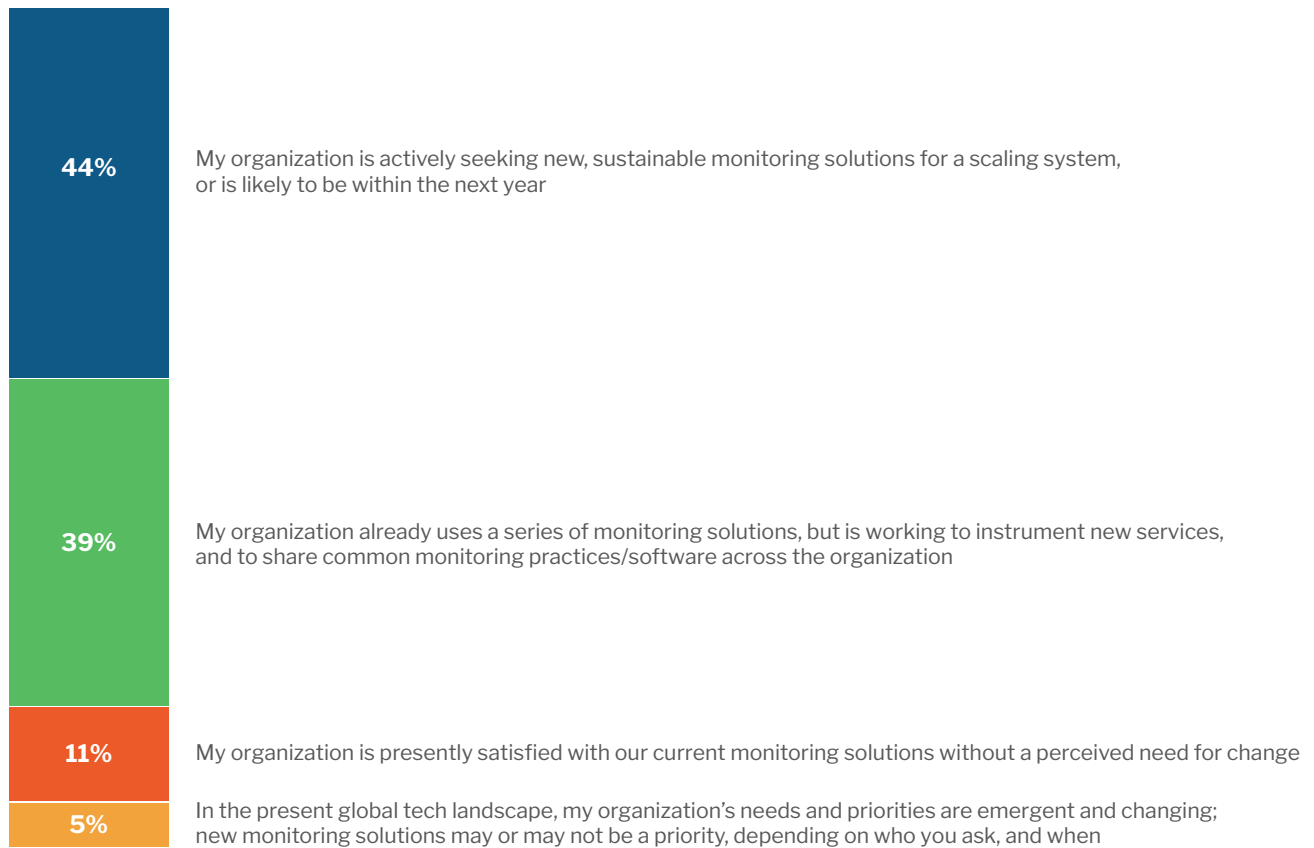
The application and IT infrastructure monitoring sector is experiencing a period of dramatic change. In a recent study conducted by 451 Research and commissioned by New Relic, only 11% of the 700 decision-makers we surveyed said they were satisfied with their current monitoring platforms. Eighty-three percent are either actively seeking new monitoring tools or have plans to expand or improve their approach to monitoring.

Figure 1: Enterprise satisfaction level with current monitoring products

Source: 451 Research custom survey

Q: Which of the following models best characterizes your company's current monitoring status?

Base: All respondents (n=700)



The primary drivers behind this significant shift are application and infrastructure modernization efforts that include the adoption of cloud and cloud-native technologies such as containers, Kubernetes and microservice architectures. While these technologies enable important business imperatives – such as the ability to quickly build the kinds of capabilities customers demand – they create a significantly more complex and dynamic environment than the traditional application stack. In turn, these dynamics create new demands on the tools used to identify and correct performance problems.

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Broadly speaking, the widespread discontent with existing monitoring tools is spurring the evolution from monitoring to observability. We define observability as the tools and processes that make systems ‘observable’ so practitioners can readily discover performance problems and why they are occurring. Most organizations require new tools to support observability since traditional monitoring tools may not be able to collect the variety of operations data at the scale required or support the kind of flexible data exploration that users need in cloud-native environments.

As organizations transition to observable systems, they are faced with a growing array of tools, both open source and commercial. While open source software has long been strong in monitoring, we are still seeing increased interest in open source. Our survey uncovered the drivers behind the adoption of open source as well as the challenges related to using it. We also learned that there is remarkable overlap of open source and commercial tools; all but three of the 700 open source monitoring tool users either currently use or are planning to use commercial monitoring tools. We think this widespread use of both commercial and open source monitoring tools will drive demand for integrations that allow organizations to take advantage of the best of both worlds.

Also notable among our findings is that organizations that employ traditional application and infrastructure technologies struggle with monitoring more than their counterparts that have more readily embraced cloud-native technologies. Without strong monitoring practices, these organizations won’t achieve good visibility into performance, whether they have adopted cloud-native technology or not. At risk is the business itself. Our research indicates that the bulk of end users will change the app or service they use due to poor performance, and such loss of customers can significantly undermine the business.

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Cloud-Native Adoption Increases Open Source Monitoring Relevance

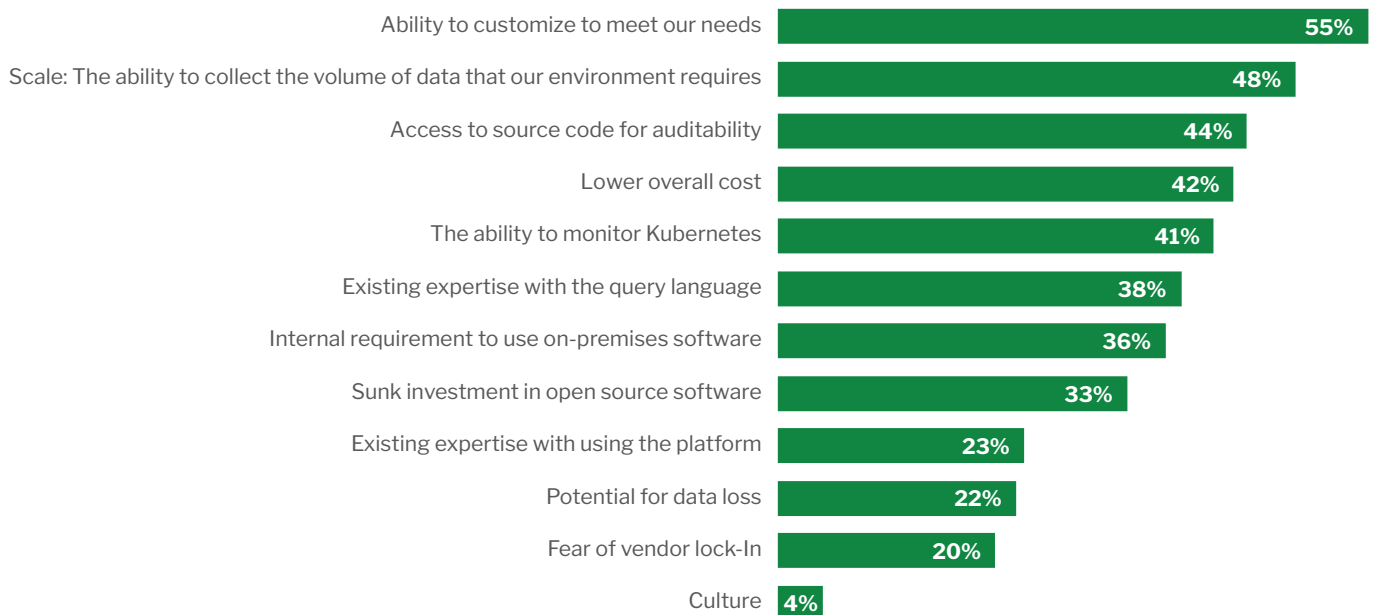
Businesses are choosing open source monitoring tools for significant reasons. While cost has historically been a primary driver for open source deployments, in our survey it ranked fourth behind customization, scalability and access to source code for auditability.

Figure 2: Reasons for choosing open source software

Source: 451 Research custom survey

Q: Which of the following factors influenced your decision to use open source monitoring tools?

Base: All respondents (n=700)



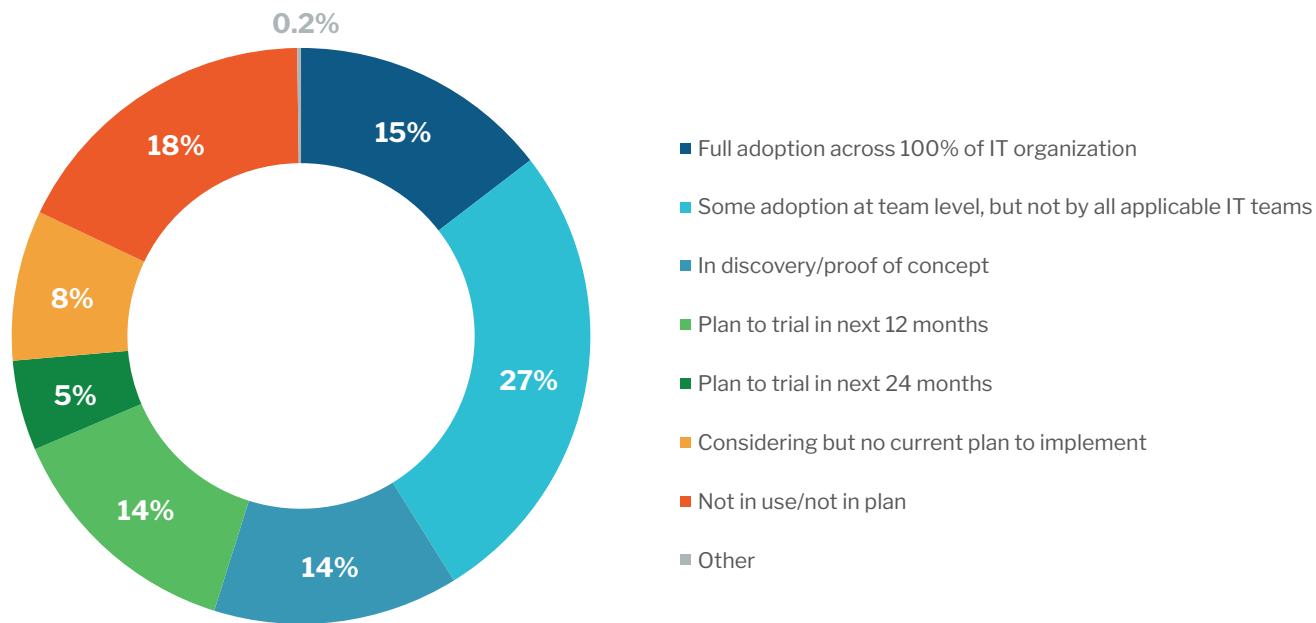
We're hearing more about Kubernetes serving as a driver of open source monitoring adoption because of the close integration with Prometheus. Forty-one percent of respondents cited the ability to monitor Kubernetes as a factor influencing their decision to use open source, a figure that coincidentally matches the adoption rate of Kubernetes among the advanced respondents to our Voice of the Enterprise DevOps survey.

Figure 3: Kubernetes adoption rate

Source: 451 Research's Voice of the Enterprise: DevOps, Workloads and Key Projects 2020

Q: What is your organization's adoption status for Kubernetes?

Base: All respondents (n=474)



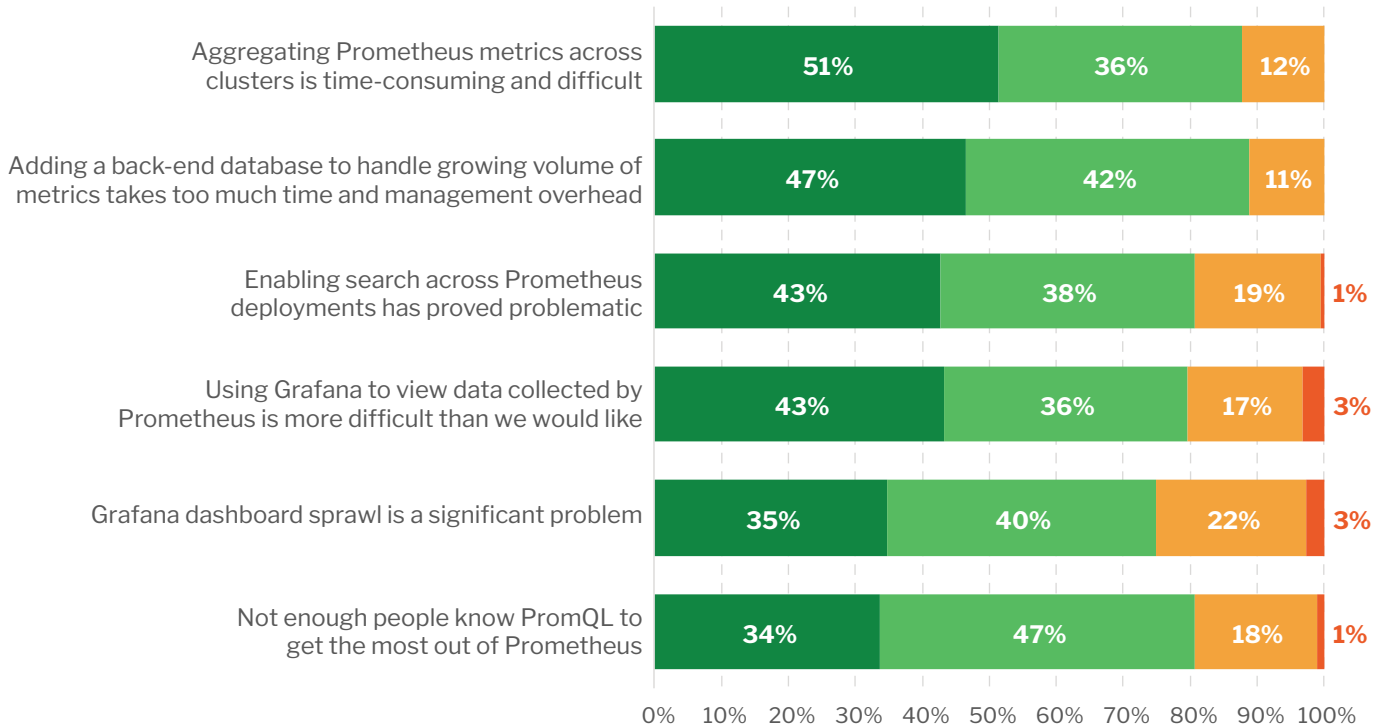
However, users of open source monitoring tools face some struggles. We asked Prometheus users about common challenges and found that the majority of users struggle with an array of problems. For instance, 89% of the Prometheus users surveyed struggle with adding a back-end database to handle the growing volume of data. Eighty-seven percent of respondents said that they found aggregating Prometheus metrics across clusters to be time-consuming and difficult, at least sometimes.

Figure 4: Challenges faced by Prometheus users

Source: 451 Research custom survey

Q: Do you agree or disagree with the following challenges associated with the use of Prometheus at your company?

Base: All respondents (n=187)



- **Strongly Agree:** High on our priority list. Constantly have to manage this risk. Something that is a constant struggle
- **Somewhat Agree:** Challenges us at times but not consistent. Sometimes a priority, sometimes not
- **Disagree**
- **Not Applicable**

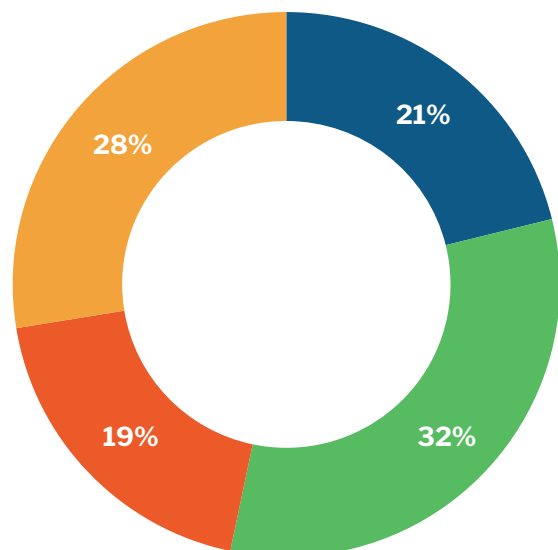
Traditional organizations struggle even more with these challenges than their counterparts that have adopted cloud-native technologies. When asked about their technology and monitoring environments, 32% said they have a mix of cloud-native and traditional technologies and were looking to make some improvements to their monitoring environments, followed by 21% who said they use traditional technologies.

Figure 5: Application environment and approach to monitoring

Source: 451 Research custom survey

Q: Which of the following best describes the application environment and approach to monitoring in your company?

Base: All respondents (n=700)



- **Traditional** – We primarily use a traditional technology stack and don't have significant efforts underway to modernize our applications or the tools/approaches we use to monitor this environment
- **Mixed** – We support a mix of cloud-native (i.e., microservices, containers or Kubernetes) and traditional applications and suffer from monitoring tool sprawl; we're looking for ways to share monitoring tools and best practices across the company
- **Cloud-Native Newbies** – We are beginning to adopt cloud-native technologies and require a new approach to monitoring in this environment
- **Cloud-Native** – Our applications are primarily built using cloud-native technologies and we have implemented modern tools and approaches to monitoring in this environment

When we looked at the problems faced by Prometheus users based on their level of adoption of cloud-native technologies, we found that traditional organizations were more likely to struggle than their cloud-native counterparts. Across the board, more traditional technology users cited issues – such as not having enough people who know the PromQL query language, challenges with using Grafana for dashboarding, enabling search across Prometheus deployments and adding a back-end database – than their cloud-native counterparts.

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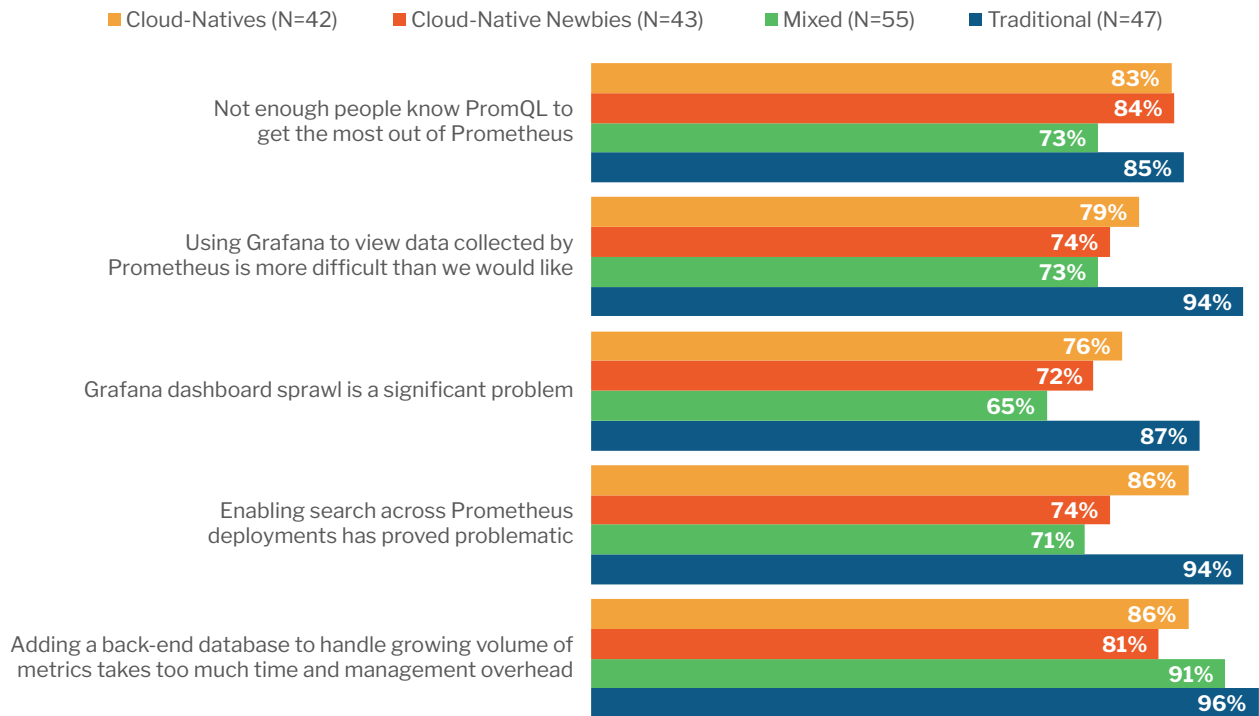
Figure 6: Traditional organizations have harder time across the board with Prometheus

Source: 451 Research custom survey

Q: Which of the following best describes the application environment and approach to monitoring in your company?

Q: Do you agree or disagree with the following challenges associated with the use of Prometheus at your company?
 AGREE ONLY (those who selected either somewhat agree or strongly agree)

Base: All respondents (n=187)



We're already seeing several market developments aimed at solving some of these pain points, as well as others that commonly frustrate users of open source monitoring software. For instance, startups are emerging with back-end databases targeted at easing some of the scaling challenges experienced by some Prometheus users. We anticipate further developments here, particularly as adoption of open source monitoring tools grows and their challenges become more commonplace.

Overlap of Commercial and Open Source Monitoring Tools

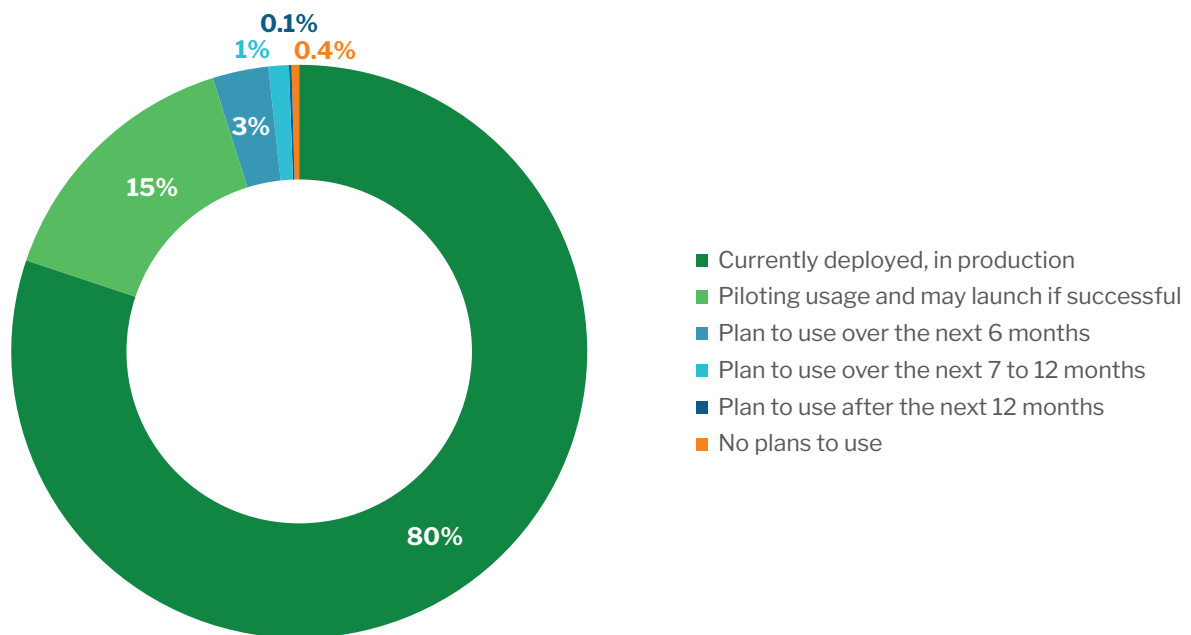
Our survey exclusively targeted users of open source monitoring tools, and we were surprised how widely this segment of the market also uses commercial tools. More than three-quarters (80%) of the open source monitoring tool users we surveyed are currently also using commercial monitoring tools in production, and a further 15% have commercial monitoring tools in pilots. The rest plan to begin using commercial monitoring tools within a year. Only three of the open source tool users said that they had no plans to use commercial monitoring tools.

Figure 7: Use of commercial monitoring tools

Source: 451 Research custom survey

Q: Which of the following best characterizes your adoption of commercial monitoring tools at your company?

Base: All respondents (n=700)



Given the broad market demand to unify operations data and tools, we anticipate that this overlap of commercial and open source tools will generate interest in deep integrations across the tools. We're already seeing that happen, particularly with Prometheus where users want to ship operations data about Kubernetes deployment collected by Prometheus into a commercial tool where it can be combined with operations data already being collected about other infrastructure.

Our survey also discovered that users of open source monitoring tools who also use commercial tools tend to outweigh the positives of their commercial tools over the negative. When we asked how they'd characterize their commercial tools, 'easy to use,' 'well-supported' and 'scalable' topped the list. Respondents cited fewer characterizations with negative connotations such as 'limited capabilities,' 'expensive' and 'lacking support to monitor required technologies.' However, here too organizations employing traditional technologies struggled more than those using cloud-native software. Cloud-native users appear more satisfied; they are more likely than the traditional organizations to name the positive characteristics.

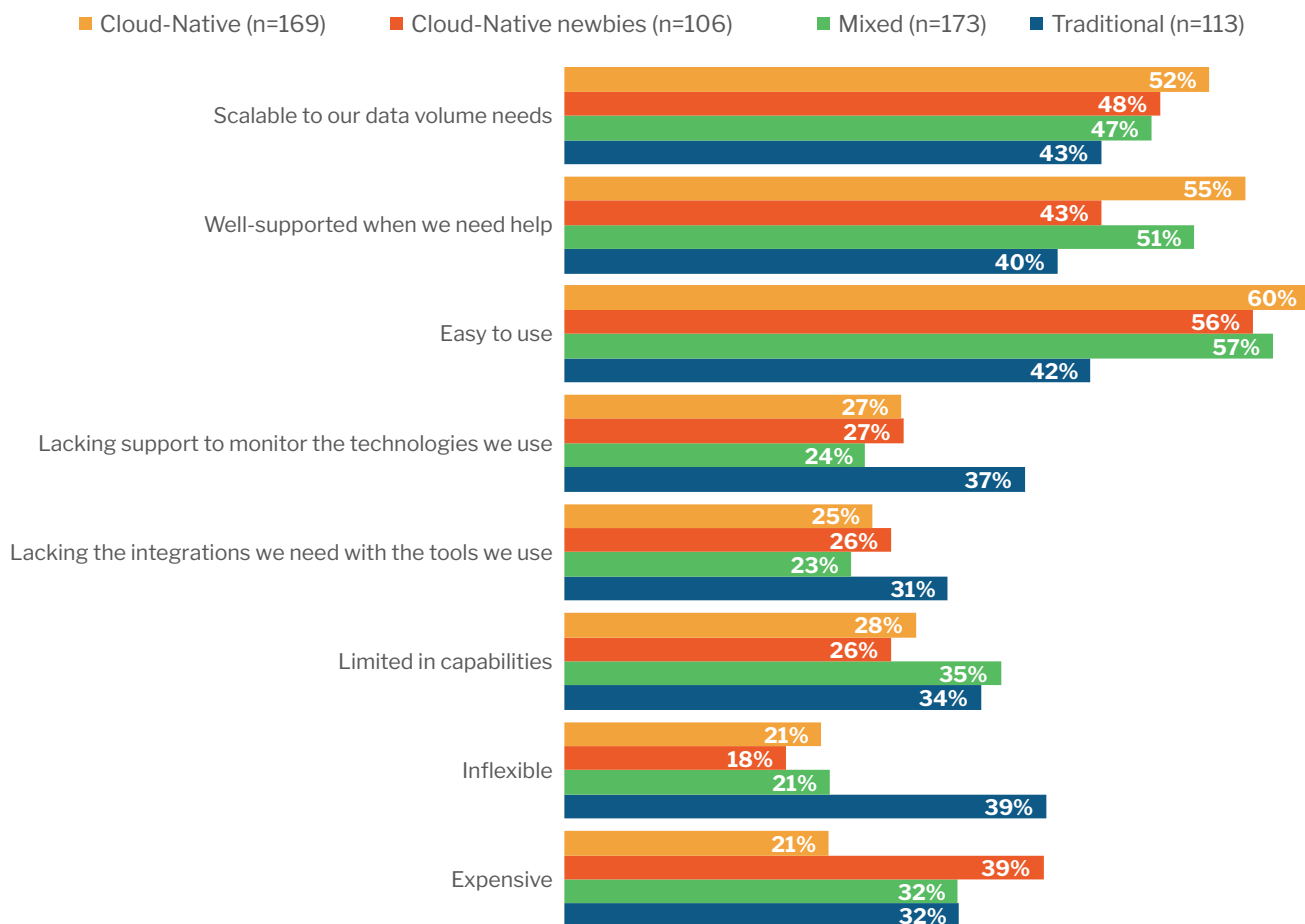
Figure 8: Satisfaction with commercial monitoring tools: cloud-native vs. traditional businesses

Source: 451 Research custom survey

Q: Which of the following best describes the application environment and approach to monitoring in your company?

Q: Which of the following would you use to describe the commercial products currently in use at your company?

Base: All respondents (n=561)



Conclusions and Recommendations

Broadly speaking, our survey indicates that businesses must embrace modern technologies and tools, and in doing so execute a transition to observability from traditional monitoring. Organizations looking to modernize their approach to monitoring should consider ensuring several capabilities: tool integration, scale and advanced analytics across different data types.

Tool Integration

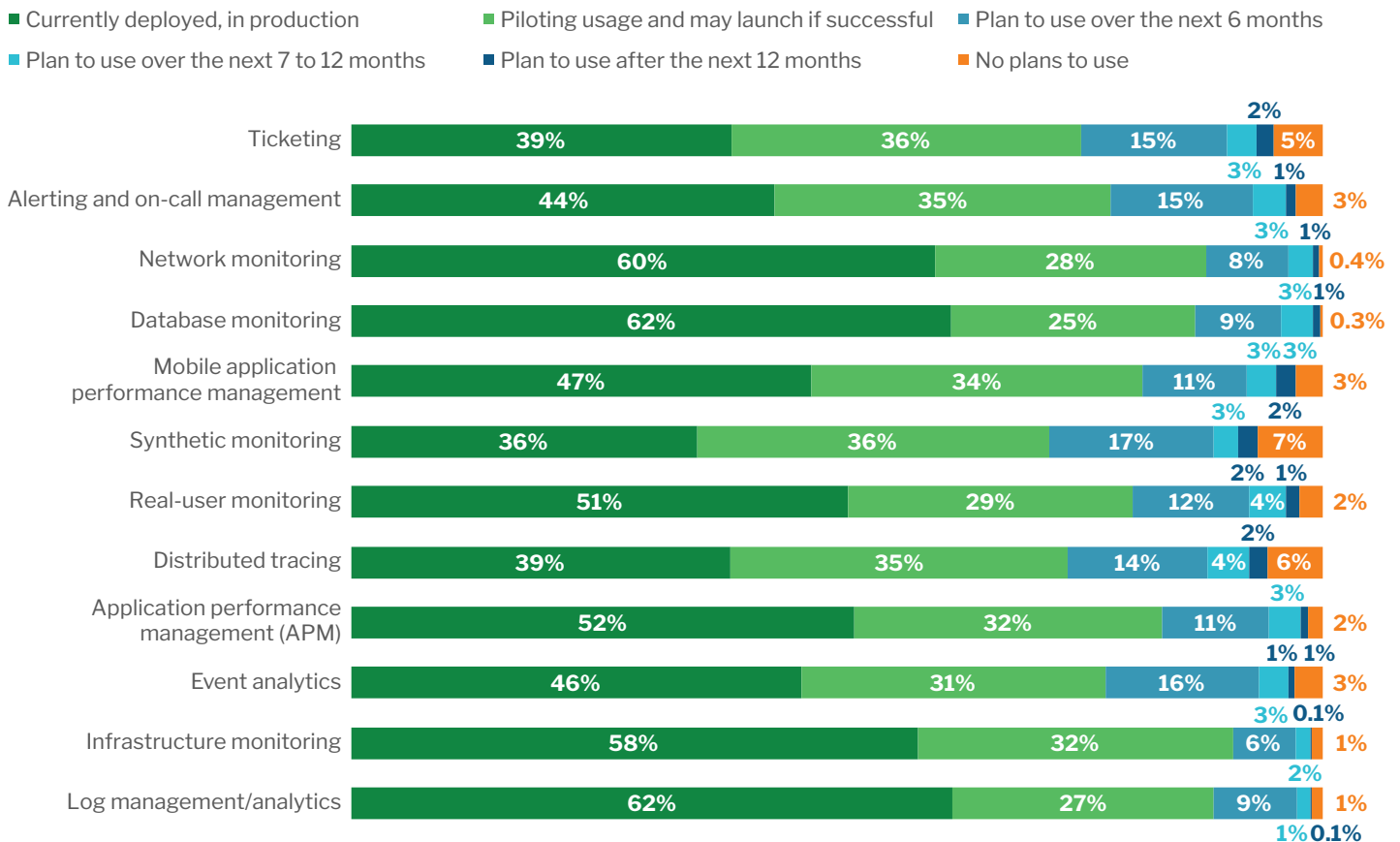
A common reaction for many businesses that are struggling with getting good visibility into the performance of their application and infrastructure environments is to add new tools. Our survey bears this out, indicating that a majority of users either have already deployed or plan to implement 12 different types of commonly used monitoring and incident response functions. The percentage of respondents who have no plans to deploy the tools was remarkably small: network monitoring and database monitoring each registered zero respondents with no plans to deploy, and log management and infrastructure monitoring had 1% each with no plans to deploy.

Figure 9: Monitoring tool adoption

Source: 451 Research custom survey

Q: Which of the following best characterizes your adoption of the following monitoring tools at your company?

Base: All respondents (n=700)



These results do not indicate that respondents necessarily plan to use a different tool from a different vendor for each function, and we would recommend that organizations consider using tools that offer multiple functions to avoid challenges associated with tool sprawl. It has become increasingly possible to do so, with many vendors expanding horizontally over the past few years to deliver several types of tools. In fact, among the top 10 vendors by revenue in this sector, all have offerings in six or more of the categories we track, with two delivering in eight categories, according to our research.

Whether an organization buys some or all of its required functions from a single vendor, users must be able to correlate and analyze data collected across the various tools and functions. For instance, by correlating data from real-user monitoring, APM and logging tools, users can more rapidly identify the source of performance problems and solve them.

Scale

Cloud-native application and infrastructure environments generate a much larger volume of operations data than traditional stacks, and legacy tools may not be able to keep up. Observability requires users to collect a potentially large and varied dataset that can ultimately help DevOps or operations professionals pinpoint the cause of performance problems. Tools must have the capability to handle this large volume of data efficiently and affordably.

Advanced Analytics Across Different Data Types

An observability practice must offer advanced analytics capabilities so that users can easily and flexibly slice and dice data in meaningful ways. In addition, advanced technologies like machine learning can be helpful in automatically surfacing insights such as anomalies, allowing users to more quickly learn about performance problems and their sources. Modern tools are applying machine learning in new ways that aim to solve a host of challenges facing organizations that have embraced cloud-native technologies. The potential is strongest in tools that can apply machine learning and other analytics across a variety of data types, potentially including metrics, distributed traces, logs and events.

Ultimately, the path to observability will likely entail the adoption of a new mix of tools that includes integrated commercial and open source software and services, as well as a modern IT approach to development that allows migration from legacy technologies that no longer support important business goals.

Demographics

For our survey, we reached out to 700 IT professionals in the US and Europe, primarily from midsize companies. Well over three-quarters (86%) directly make decisions related to the purchasing of monitoring tools at their company, and 14% influence such decisions. All the organizations currently use open source management tools.

Figure 10: Geography

Source: 451 Research custom survey
Q: In which country are you located?
Base: All respondents (n=700)

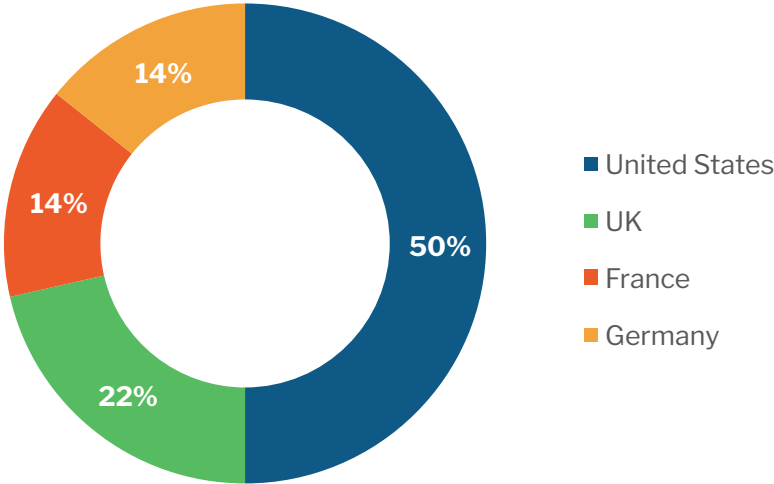


Figure 11: Company size

Source: 451 Research custom survey
Q: What is the total number of employees in your company?
Base: All respondents (n=700)

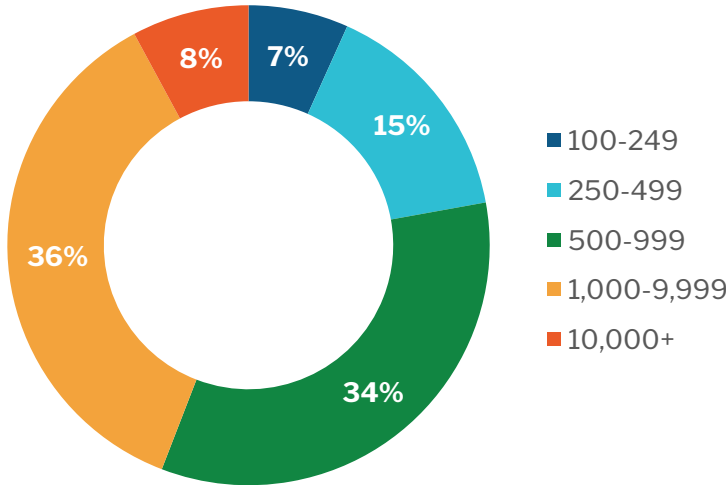
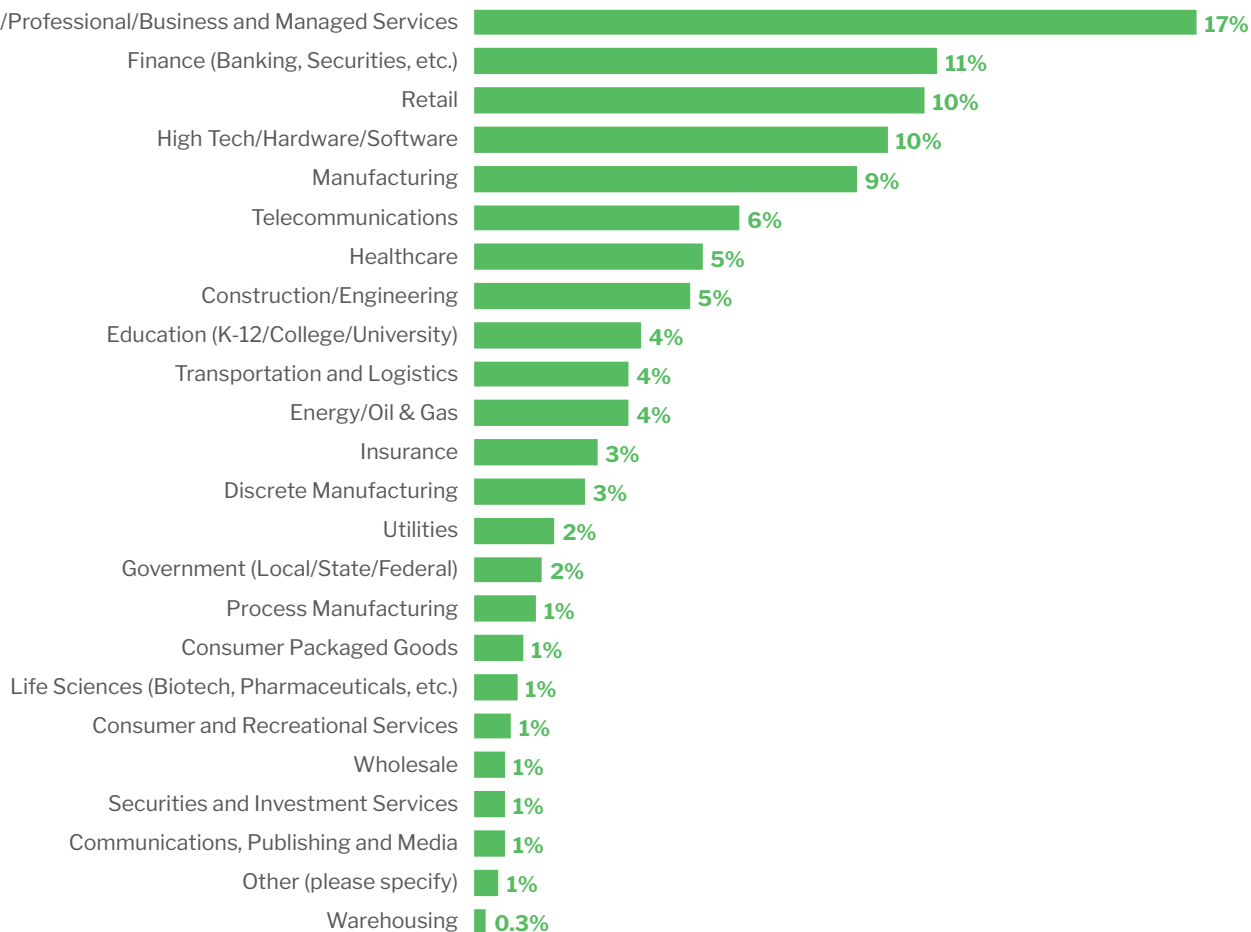


Figure 12: Industry

Source: 451 Research custom survey

Q: Which of the following best describes your company's industry?

Base: All respondents (n=700)





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