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Taking Observability to the Next Level:

OpenTelemetry's Emerging Role in IT Performance and Reliability

March 2025 EMA Research Report
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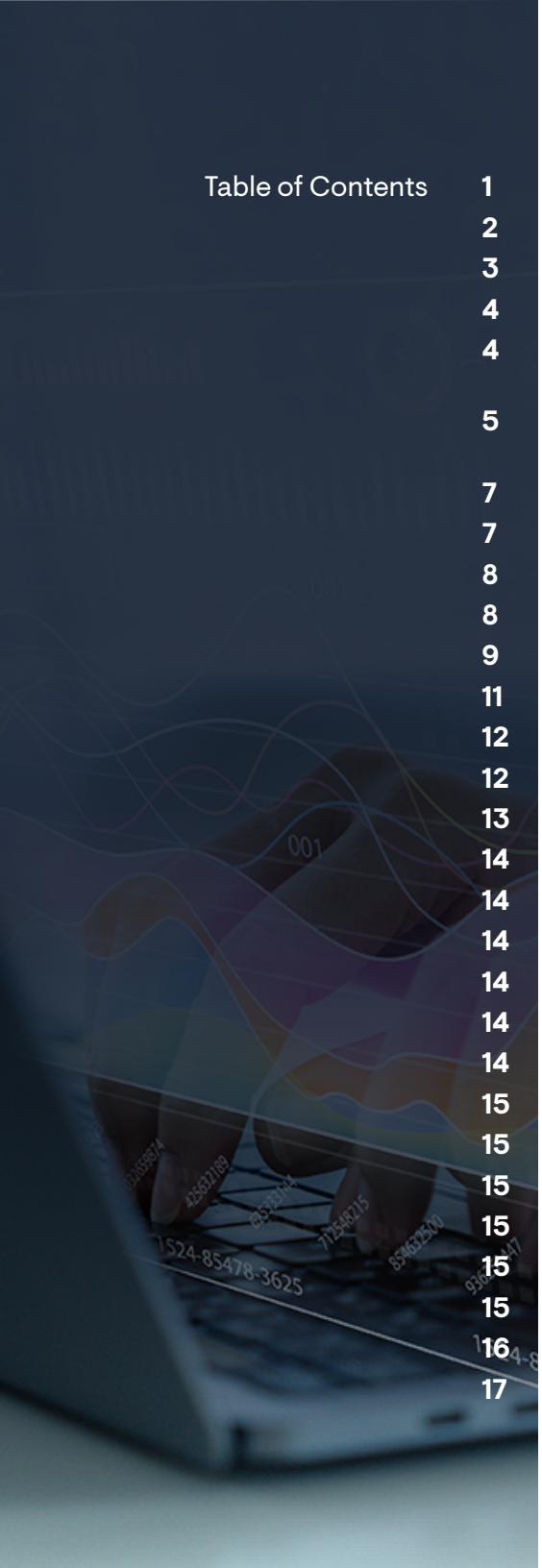
and Pete Goldin, Editor and Publisher, *APMdigest*



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Executive Summary

OpenTelemetry is one of the most widely adopted cloud native open source projects. It marks a significant shift from proprietary instrumentation to a standardized approach for generating and ingesting telemetry data, enabling organizations to enhance IT performance and reliability, and ultimately user experience. This report, based on insights from 400 respondents across industries, examines the perception, adoption, usage, and future of OpenTelemetry.

Key Findings

- **Widespread Awareness and Positive Perception**
  OpenTelemetry is widely known across IT organizations—the majority (68.3%) of respondents are moderately or very familiar with OpenTelemetry. Half of respondents consider OpenTelemetry mature enough for implementation today, and another 31% consider it moderately mature and useful. Almost all (98.7%) express support for where the project is heading. In addition, 61% believe OpenTelemetry is a very important or critical enabler of observability, and more than 57% place a similar value on OpenTelemetry for their own observability strategy.
- **High Adoption Across IT**
  OpenTelemetry is widely used across IT organizations. Almost half of respondents are currently using OpenTelemetry, and another quarter are planning to implement. More than 95% of those using OpenTelemetry are instrumenting at least 10% of their environment with OpenTelemetry, and 35% are instrumenting 50% or more. Over 67% plan to fully instrument their environment with OpenTelemetry.
- **Observability Maturity Drives OpenTelemetry**
  The survey shows a clear correlation between observability maturity and OpenTelemetry adoption—a majority (61%) of respondents with a mature observability practice are already using OpenTelemetry, while only 1% are not using it.
- **Expanding Coverage**
  Organizations plan to continue expanding OpenTelemetry coverage. Cloud native applications, multi-cloud environments, IoT, and mobile applications are among the top targets.
- **OpenTelemetry Challenges: Complexity and Interoperability**
  Complexity of implementation and the time, staff, effort, and cost required are the key barriers to OpenTelemetry adoption and the main challenges experienced during implementation. Compatibility with existing systems and languages, lack of skilled resources, absence of vendor support, and data management and storage issues are also major pain points.
- **OpenTelemetry Benefits: Valued Enabler of Observability**
  Improved ITOps and developer productivity, simplified metrics collection, and greater visibility into software and systems are cited as the favorite direct benefits of OpenTelemetry. In addition, reduced MTTR and improved customer and employee experience are cited as top ways OpenTelemetry helps observability. More than one-third report that OpenTelemetry enabled their observability solution to improve application or mobile app response time.
- **Reduced Costs and Solid ROI**
  Over 46% of users are seeing greater than 20% ROI for OpenTelemetry and another 40.7% are achieving 10%-20% ROI. The main ROI drivers include improved observability, cost savings, and reduced downtime and MTTR. For organizations that reduced observability costs with OpenTelemetry, 42% report a decrease of more than 20%, and another 42% say costs decreased 10%-20%.
- **High Expectations for the Future**
  About 92% have positive expectations about the future impact of OpenTelemetry on their observability capabilities. Improved interoperability, integration, and observability scalability are seen as the top reasons for these positive expectations.

Introduction

As organizations strive for real-time visibility, improved IT efficiency, and cost-effective operations, OpenTelemetry (OTel) is rapidly becoming a foundational element of modern observability strategies.

A Short History of Observability

Ensuring uptime and performance of IT assets—infrastructure, applications, and services—has always been a fundamental objective of IT operations, and has also become a domain for other disciplines, such as DevOps, developers, and SREs. In the early days, this goal was accomplished by monitoring static infrastructure, such as servers, networks, and databases. During the digital revolution, application performance management (APM) emerged, providing deeper visibility into application behavior, response times, and dependencies. Today, this approach evolved into observability, going beyond APM's application-centric focus to provide visibility across a distributed enterprise and hybrid infrastructure incorporating on-premises and cloud.

Observability is based on the collection and correlation of performance data in real time, combined with intelligent analysis to deliver full-stack visibility and actionable insights to help proactively ensure availability and performance of systems, applications, and infrastructure. OpenTelemetry is revolutionizing the first part of that mission, providing a vendor-neutral, open source standard for collecting and exporting telemetry data.

OpenTelemetry: The New Standard for Observability Data Collection

OpenTelemetry is more than just a standard. It is an open source framework and suite of tools that facilitates the generation, collection, and exporting of telemetry data.

The merger of OpenCensus (originally started by Google) and OpenTracing (originally a CNCF incubating project) in May 2019 created the OpenTelemetry project, which became a Cloud Native Computing Foundation (CNCF) Sandbox project shortly after. OpenTelemetry was accepted as a CNCF incubating project in August 2021. CNCF is the open source, vendor-neutral hub of cloud native computing, hosting projects like Kubernetes, Prometheus, and OpenTelemetry to make cloud native universal and sustainable.

OpenTelemetry is gaining momentum across observability practices in a variety of industries, and is supported by most of the major observability platform vendors. What makes the technology so compelling is that it combines the three pillars of observability—tracing, metrics, and logs, with profiling added recently and more to come—into one universal data collection system, and it has the added appeal of being open source.

This report, based on a global survey of 400 IT professionals, examines the industry's perception of OpenTelemetry, its usage, benefits, challenges, and future outlook.

Through this study, EMA aims to:

1. Demonstrate the broad awareness and positive perception of OpenTelemetry throughout the IT community.
2. Highlight the popularity and pervasive penetration of OpenTelemetry as an essential enabler of observability platforms.
3. Explore the challenges and advantages OpenTelemetry offers to observability practices.
4. Evaluate future trends shaping OpenTelemetry and its impact on observability.

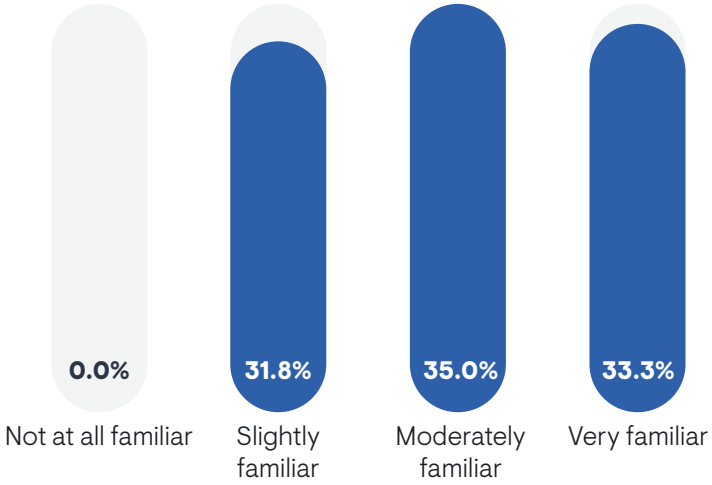
The findings presented in this report are designed to guide IT operations, DevOps, SREs, and developers in their pursuit of observability, as well as technology vendors as they strategize about their role in the future of observability.

Broad Awareness and Positive Perception of OpenTelemetry

OpenTelemetry is already widely known across IT organizations, according to the survey findings—the majority (68.3%) of respondents are moderately or very familiar with OpenTelemetry.

Just over 25% of survey respondents are C-level IT executives and another 50% are a mix of managers or directors in IT operations, DevOps, and development. The remainder serve in various IT functions.

Are you familiar with OpenTelemetry, the open source standard for collecting and exporting telemetry data (metrics, logs, and traces) to enable observability?



Are you familiar with OpenTelemetry, the open source standard for collecting and exporting telemetry data to enable observability? by Observability maturity

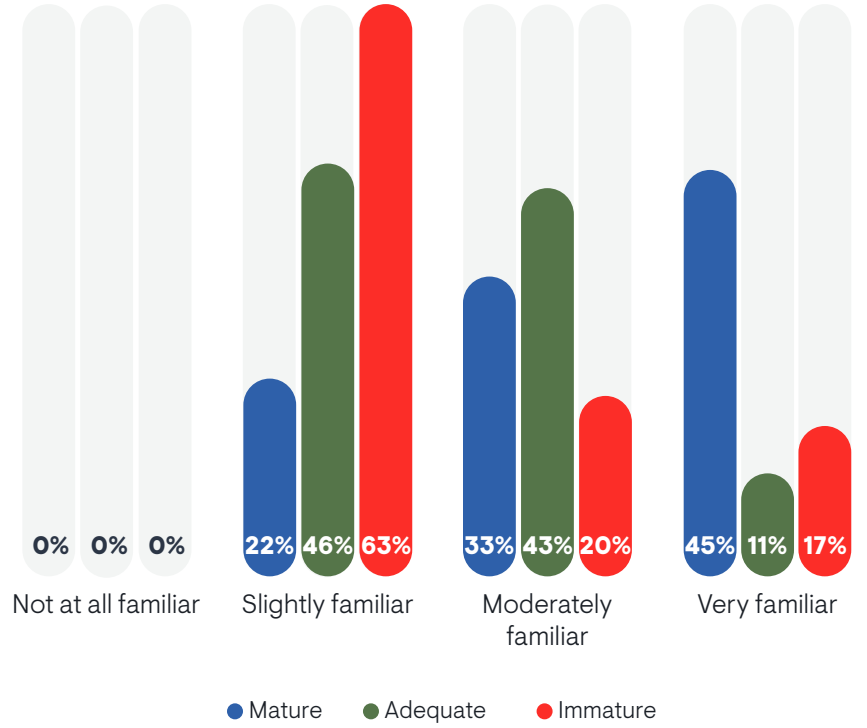


Figure 1

Sample Size = 400

OpenTelemetry Considered Mature and Useful

Half of respondents consider OpenTelemetry mature enough for implementation today, and another 31% consider OpenTelemetry moderately mature and useful. Almost all (98.7%) express support for where OpenTelemetry is heading. These results demonstrate strong confidence in the capabilities of this popular open source project.

How do you assess the maturity of OpenTelemetry?

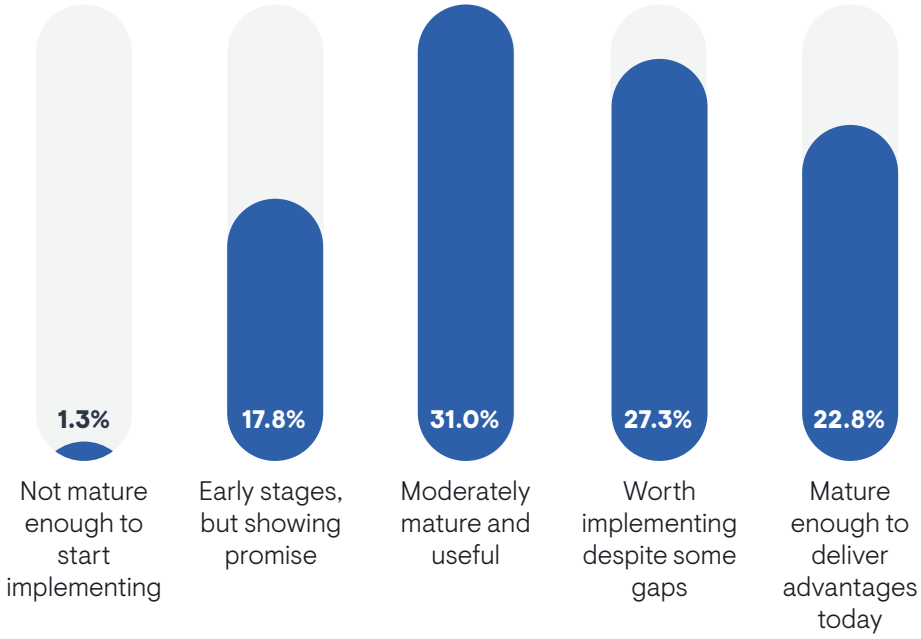


Figure 2

Sample Size = 400

OpenTelemetry's Role in Observability

IT industry perception of OpenTelemetry's value and potential as an enabler of observability is also decisive. While 61% believe OpenTelemetry is a very important or critical enabler of observability, 57% place a similar value on the importance of OpenTelemetry to their own observability strategy. Improving observability is also given as the principal reason why organizations adopted or plan to adopt OpenTelemetry.

How important is OpenTelemetry as an enabler for observability?

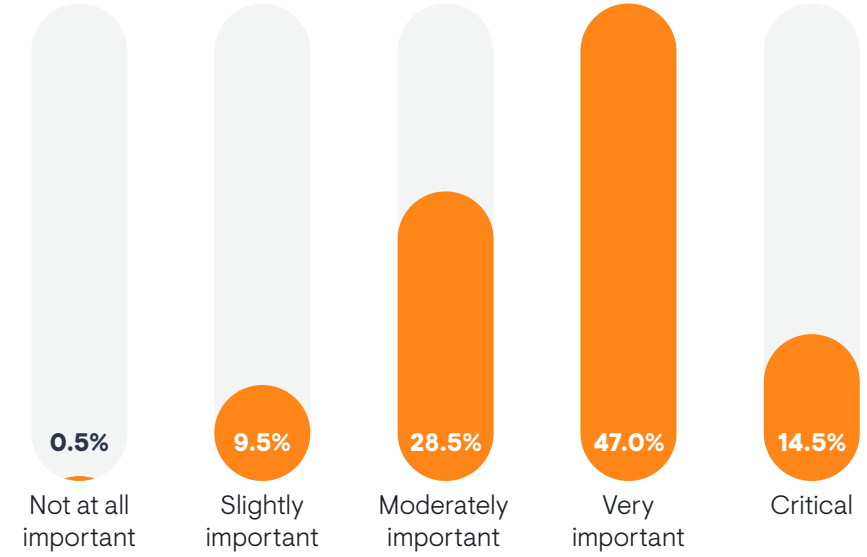


Figure 3

Sample Size = 400

The Observability Maturity Factor

An organization's observability maturity appears to have a significant impact on the perception of OpenTelemetry. A majority (64%) of survey respondents assess their observability practices as mature or very mature, while 28.5% have adequate observability and 7.6% are immature or very immature.

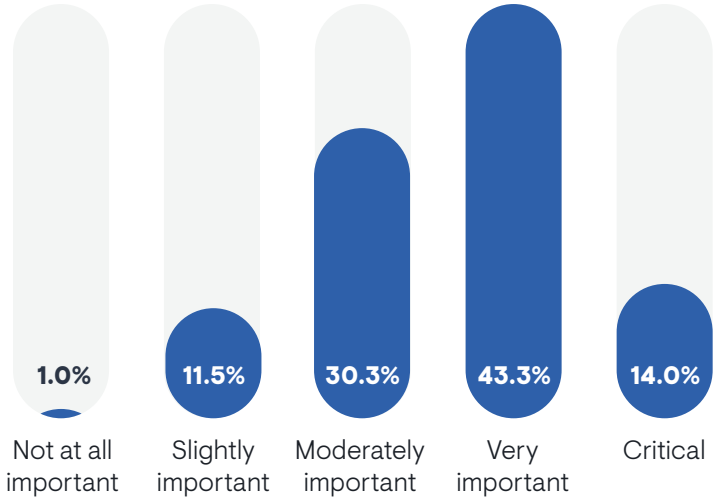
The survey results show that awareness and importance of OpenTelemetry increase in correlation with an organization's observability maturity. For example, 45% of respondents with mature observability practices are very familiar with OpenTelemetry, compared to only 17% of those with immature observability practices. Conversely, 63% of those with immature observability practices are only slightly familiar with OpenTelemetry.

Similarly, the majority (67%) of those with mature observability practices see OpenTelemetry as very important or critical to their own observability strategy, while only 37% of those with an immature observability practice see OpenTelemetry as very important and 0% see it as critical.

Significant Executive Support

With more senior roles in the organization, higher importance is placed on OpenTelemetry, signifying substantial executive buy-in. When asked how important OpenTelemetry integration is when purchasing new observability solutions and mobile monitoring tools, the response is high across all roles, but highest for C-level IT executives at 92% for observability and 89% for mobile monitoring.

How important is OpenTelemetry to your organization's observability strategy?



How important is OpenTelemetry to your organization's observability strategy? by Observability maturity

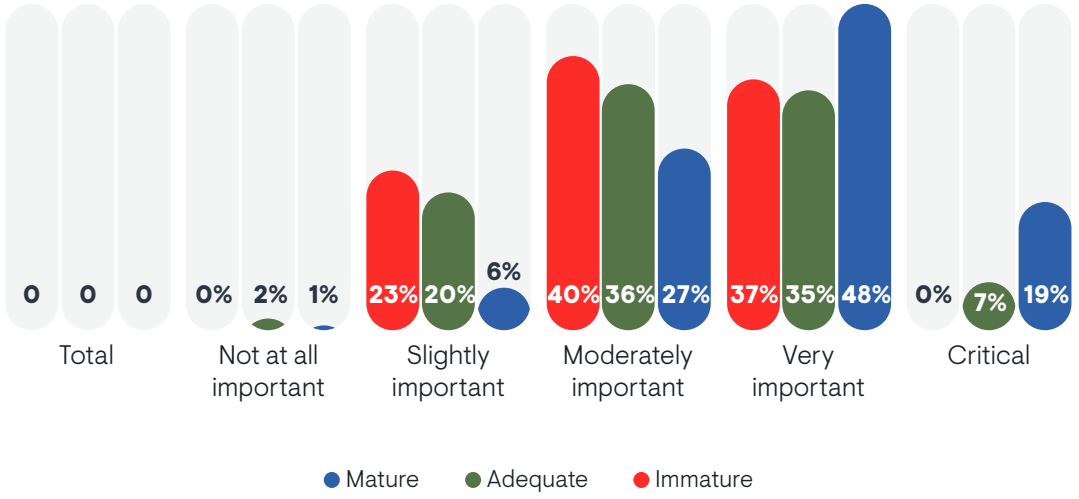


Figure 4

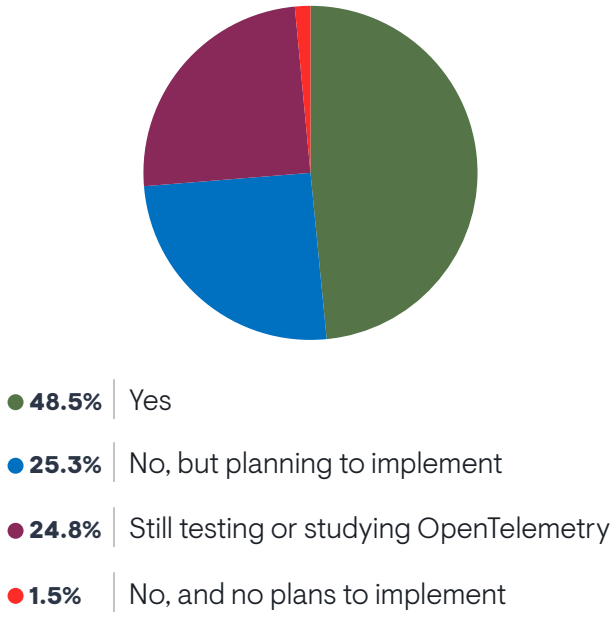
Sample Size = 400

Widespread Adoption of OpenTelemetry

IT organizations are using OpenTelemetry widely in a variety of industries. According to survey results, almost half (48.5%) of respondents currently use OpenTelemetry. Another 25.3% are not using OpenTelemetry yet, but are planning to implement. This means that just under 75% are either using or planning to use OpenTelemetry, a statistic that bodes well for the future of the standard. The remaining 24.8% are still evaluating, while only 1.5% of respondents had no plans to implement.

The survey shows a clear correlation between observability maturity and OpenTelemetry adoption—usage increases with observability maturity. The majority (61%) of respondents with a mature observability practice already use OpenTelemetry, compared to 1% who don't use it. Conversely, only 30% of respondents with an immature observability practice are using OpenTelemetry.

Is your organization currently using OpenTelemetry to support observability?



Is your organization currently using OpenTelemetry to support observability? by Observability maturity

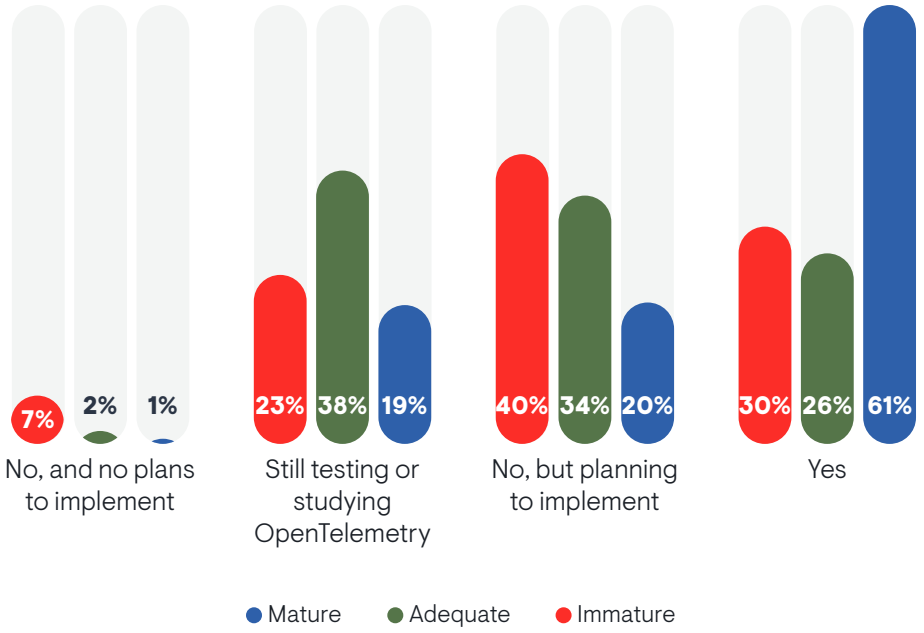


Figure 5

Sample Size = 400

More than 95% of those currently using OpenTelemetry are instrumenting at least 10% of their environment with OpenTelemetry, and 35% are instrumenting 50% or more of their environment.

What percentage of your IT environment is currently instrumented with OTel instead of a proprietary agent?

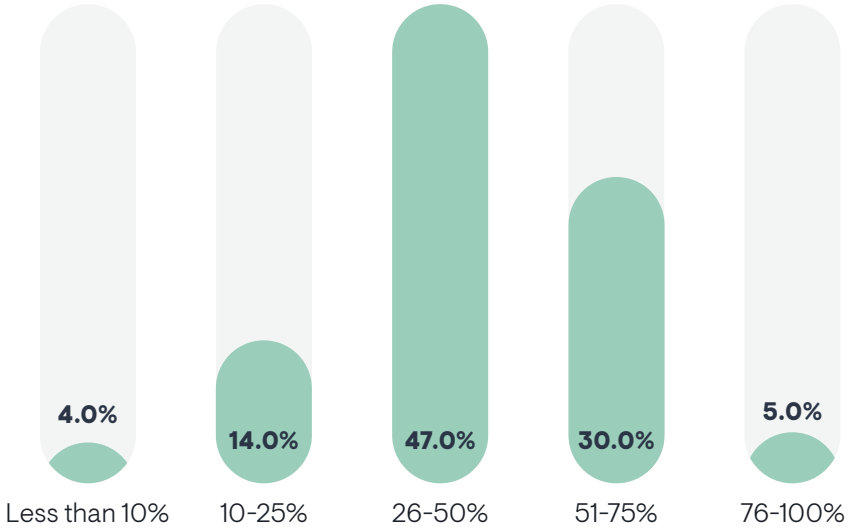


Figure 6

Sample Size = 194

Broad Usage Across IT

Usage of OpenTelemetry spans a variety of IT roles. According to the survey, the primary role using or planning to use OpenTelemetry is IT operations (27.3%), followed by developers (17.2%), DevOps (15.8%), and site reliability engineers (14.8%).

The survey also shows that OpenTelemetry is integrated with a range of tools including observability (14.9%), application performance monitoring/management (14.6%), network performance monitoring/management (14.6%), and infrastructure monitoring (14.3%).

OpenTelemetry is also used with the most popular programming languages, including Java (22.4%), JavaScript/TypeScript (19.8%), C++ (18%), and Python (17.4%).

Which roles are using OpenTelemetry within your organization, or will be once implemented?

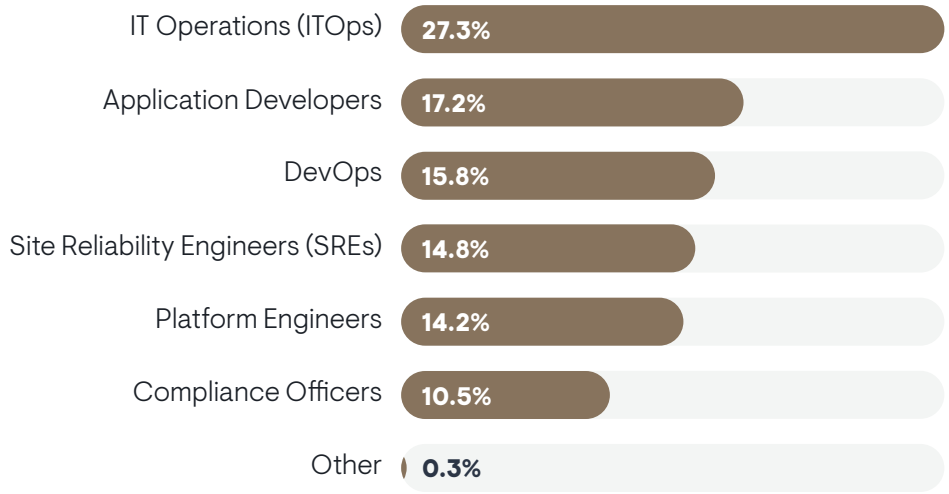


Figure 7

Sample Size = 295, Valid Cases = 295, Total Mentions = 791

Focus on Cloud Visibility

OpenTelemetry is used to monitor all types of environments, with the most concentrated usage in the cloud. According to the survey, cloud (16.1%), hybrid cloud (12.4%), and multi-cloud (9.9%) are the top three environments where OpenTelemetry is currently deployed. This data also aligns with the survey findings that three of the four most popular observability solutions are hyperscaler tools: Google Cloud Operations Suite, AWS CloudWatch, and Azure Monitor.

However, it is important to note that respondents report OpenTelemetry usage in a diverse range of other environments, including on-premises servers, edge computing, mobile, web, mainframe, microservices architecture, and Kubernetes/containers. While the hyperscaler tools are popular, they are environment-specific. In the age of multi-cloud and hybrid cloud, observability platforms provide the "single pane of glass" view across all the environments an organization uses. OpenTelemetry makes it easier to collect all the data from the various environment-specific collectors and use it all together for a complete view across on-premises, hosted, cloud, and edge environments.

This data shows that OpenTelemetry has proven agility to be used across the IT landscape. As a VP of a managed services company that participated in the survey explains, OpenTelemetry offers "consistent monitoring and data collection across different cloud environments and technology stacks."

Expanding OpenTelemetry Deployments

When asked about plans to expand the use of OpenTelemetry in the next 12-24 months, the leading response is extending coverage across more systems or applications. Cloud native applications, multi-cloud environments, IoT, and both on-prem and mobile applications are the top targets for future OpenTelemetry integration.

OpenTelemetry Challenges and Concerns

The survey indicates the IT industry has considerable enthusiasm for OpenTelemetry, but as with any emerging technology, IT professionals have some concerns about OpenTelemetry as well.

When asked about OpenTelemetry challenges and concerns, respondents provided a range of answers.

Complexity of Implementation

Complexity of implementation tops the list of OpenTelemetry user challenges. An ITOps manager in retail admits, "Although OpenTelemetry offers a robust set of tools, it can be difficult to implement and configure."

A platform engineering director elaborates, "Installing and deploying OpenTelemetry can be complex for large systems. Some applications and systems may need special compatibility or customization to fully integrate with OpenTelemetry."

Looking to future project evolution, a manager at a professional services company adds, "Rapid changes in the project can make it difficult to maintain stability in the production environment."

Lack of Resources

The lack of skilled resources and the training required to implement and manage OpenTelemetry are major concerns for many survey respondents. An ITOps manager says, "To take advantage of the capabilities of OpenTelemetry, the technical team needs to have in-depth knowledge of how to deploy, configure, and maintain OpenTelemetry."

An IT manager in manufacturing adds that availability of the right talent is a key challenge.

Compatibility with Existing Systems

Although one of OpenTelemetry's greatest advantages is that the vendor-neutral technology is intended to work across a variety of environments and integrate with various tools, respondents still express frustration with OpenTelemetry integration.

Some of this concern may be speculative. For example, one IT manager says, "I'm concerned that OpenTelemetry will have trouble with compatibility and integration." This may just be a perception issue.

On the other hand, a few reported actual integration challenges during implementation. For example, a respondent comments, "We have already fully adopted OpenTelemetry broadly. However, it is complicated to implement so many different integrations into our existing systems."

An IT manager in the finance industry also voiced concern about future "compatibility with a wide range of devices as IT technology improves."

High Cost

Several respondents are troubled about the costs of adopting OpenTelemetry, citing staff resources, development, and training, as well as data processing, analysis, and storage, as expenses.

"The budget to implement OpenTelemetry is high, which is very challenging," a DevOps manager noted.

"The increasing cost of enhanced implementation and integration with legacy applications are challenges," an IT security manager confirms.

Language Dependencies

Some respondents have issues with the fact that OpenTelemetry only "supports certain languages at varying levels of stability." While it is true OpenTelemetry does not currently support every language, the project supports popular programming languages, including Java, JavaScript, Python, Go, .NET, C++, Ruby, PHP, Erlang/Elixir, Rust, and Swift.

Security Risks

Respondents express cybersecurity concerns about OpenTelemetry around issues such as exploitable vulnerabilities, malware, data security and privacy, and compliance.

Data Management and Storage

Data management and storage issues are a consideration for many respondents, especially with regard to handling large data volumes.

Performance Issues

The performance overhead required to run OpenTelemetry is concerning for some, as a VP in charge of cloud explains, "I think if the overall amount of data is too large, it will most likely affect the overall system responsiveness, resulting in poor performance and impacting the overall value."

A VP in DevOps adds, "As the number of edge devices increases, the efficiency of data collection and transmission of OpenTelemetry has not yet been fully optimized in low-power, high-latency network environments."

For enterprises that experienced performance degradation from OpenTelemetry, the most common root causes include database performance bottlenecks, excessive disk I/O operations due to bad code or configuration, deployment delays, and I/O bottlenecks.

Project Maturity

While the survey shows that over 50% of respondents consider OpenTelemetry mature and worth implementing, others agree with a development manager who says, "Maybe the greatest challenge for OpenTelemetry is that the project is not mature. While the tracing component is fairly well advanced, the metrics and logging parts are still being formed."

A systems integrator adds, "It can collect most metrics, logs, and traces, but support for some data types is limited. Not all types of logs are fully supported out of the box."

In terms of supported signals, this is just the beginning. The project started with metrics, logs, and traces, and recently added profiling. There are many other potential data sources that contributors are currently exploring.

Vendor Support

Lack of a vendor ecosystem and tech support is cited by respondents as a concern, similar to any open source solution. In addition, an IT executive in finance observed, "Solution providers' adherence to OpenTelemetry is not guaranteed."

Resistance to Change

Resistance to change within the organization is another OpenTelemetry challenge that is common with any new technology or process. A compliance team leader says, "The biggest barrier is staff wanting to stick to old systems."

Impact of AI

Several respondents express uncertainty about how OpenTelemetry will work with artificial intelligence (AI) as it becomes more prevalent in the enterprise. "The rapidly emerging Generative AI use cases might make it more complex to adopt OpenTelemetry as is, reducing its impact," a development manager in telecom suggests.

Barriers to OpenTelemetry Adoption

Mirroring the responses about challenges in general, key barriers keeping organizations from adopting OpenTelemetry include complexity of implementation (14.7%) and integration with the user's existing tools (13.7%). Concerns about OpenTelemetry maturity and lack of vendor support (11%), expertise and resources needed for deployment and management (10.3%), and cost (10.3%) are also barriers to adoption.

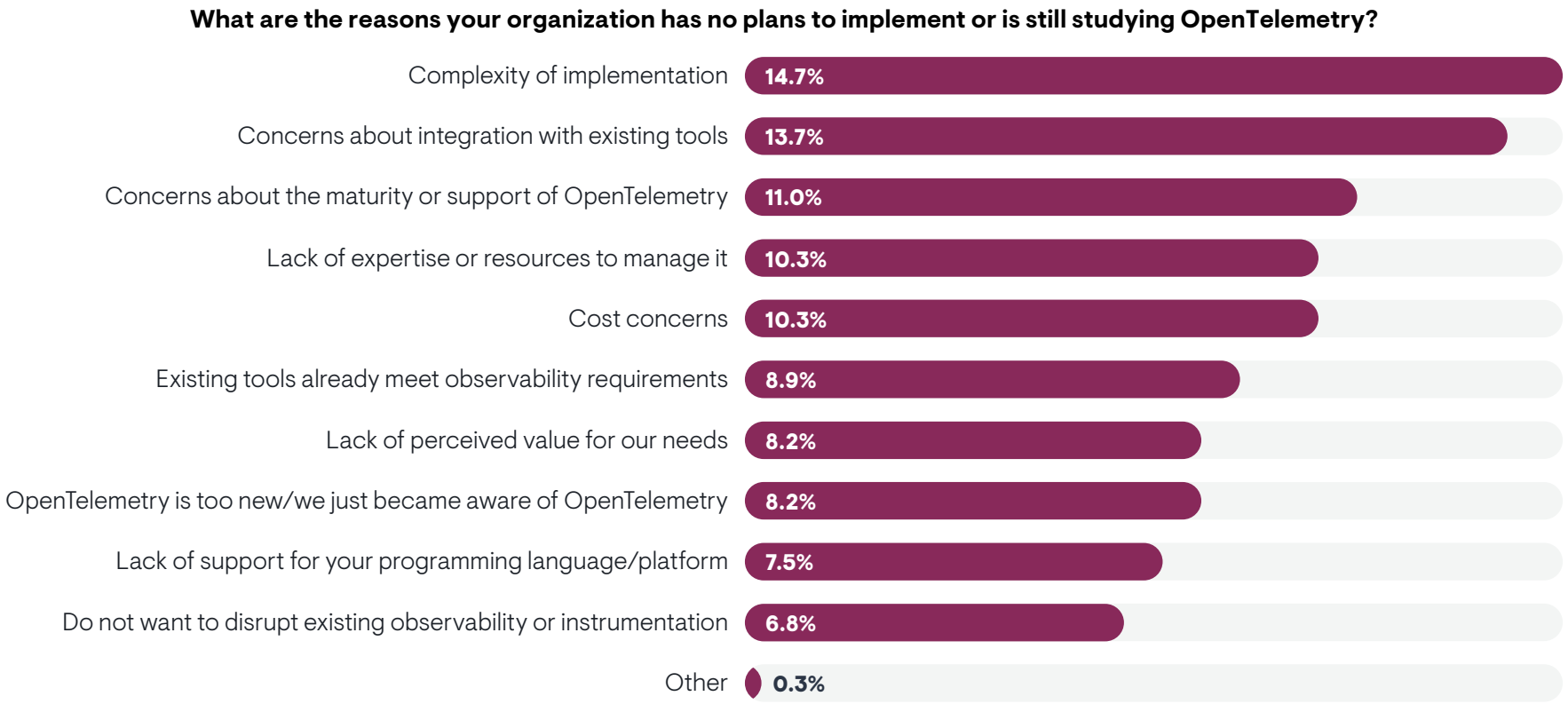


Figure 8

Sample Size = 105, Valid Cases = 105, Total Mentions = 292

OpenTelemetry Implementation Challenges

The main challenges respondents encountered, or expect to encounter, with OpenTelemetry implementation include integration with current tools (16.3%) and complexity (15.7%), very similar to the barriers that are stopping some organizations from adopting OpenTelemetry. Data management and storage (11.6%) and the implementation learning curve (11.1%) are also pain points.

What challenges have you encountered with OpenTelemetry, or expect to encounter once OpenTelemetry is implemented?

Figure 9

Sample Size = 295, Valid Cases = 295, Total Mentions = 732

Lack of expertise or resources (23%) is the primary organizational or team-related challenge experienced while implementing OpenTelemetry. Other challenges in this area include difficulty aligning multiple teams or departments (20.9%), not enough time to prioritize OpenTelemetry implementation (18.9%), and resistance to change (17%).

What organizational or team-related challenges have you encountered with implementing OpenTelemetry?

Figure 10

Sample Size = 295, Valid Cases = 295, Total Mentions = 578

Barriers to OpenTelemetry Expansion

The main concerns deterring organizations from adopting OpenTelemetry more broadly include the effort required for implementation (22.3%) and costs (18.6%). A common concern about open source projects, like OpenTelemetry, is the lack of vendor support (13.9%).

For those who do not plan to expand the use of OpenTelemetry in the next 12-24 months, almost half (45.5%) say lack of resources or staff is the main obstacle.

Which concerns about OpenTelemetry are keeping your organization from adopting it broadly?

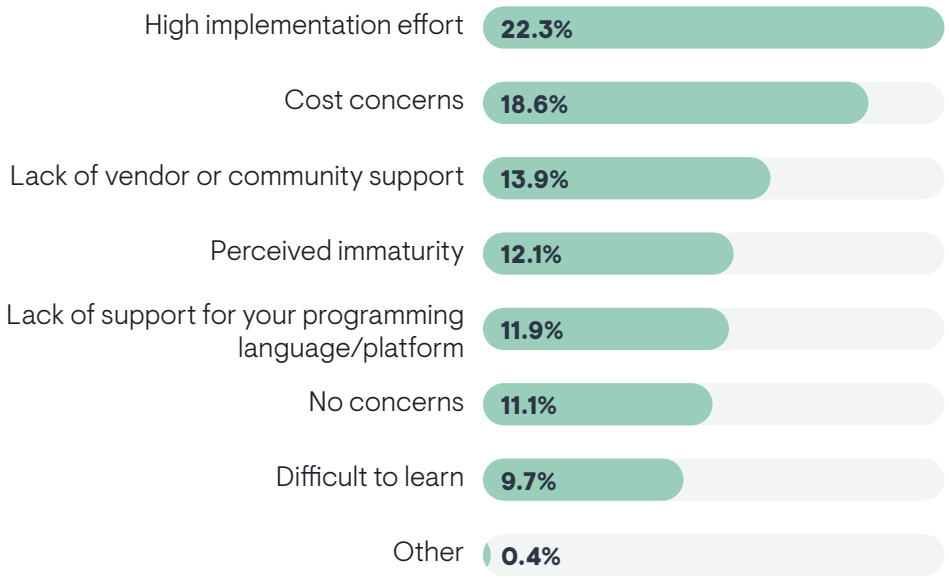


Figure 11

Sample Size = 400, Valid Cases = 400, Total Mentions = 741

OpenTelemetry: Worth the Effort

Many of the concerns from respondents do not necessarily reflect badly on OpenTelemetry. Any new technology is going to take time and effort to implement—the real question: Is it worth it? According to the survey results, the answer is yes. The strong enthusiasm demonstrated on several charts in this report definitively show that the majority of respondents agree that OpenTelemetry is worth the time, effort, and cost, despite the challenges and concerns outlined here.

An ITSM manager agrees, "This is a fairly new thing we are planning and working on integrating ... We just have so many different systems and other new tools we are implementing, so it's going to take time to get everything fully integrated. However, so far, we are very happy with OpenTelemetry."

An engineering team leader adds, "OpenTelemetry is difficult to apply, but when you manage it, OpenTelemetry is really useful."

OpenTelemetry Benefits: Fortifying the Power of Observability

The extensive benefits OpenTelemetry delivers to users drives its appeal. Respondents cite improved productivity, simplified metrics collection, and greater visibility into software and systems as the predominant direct benefits.

What benefits does OpenTelemetry provide your organization?

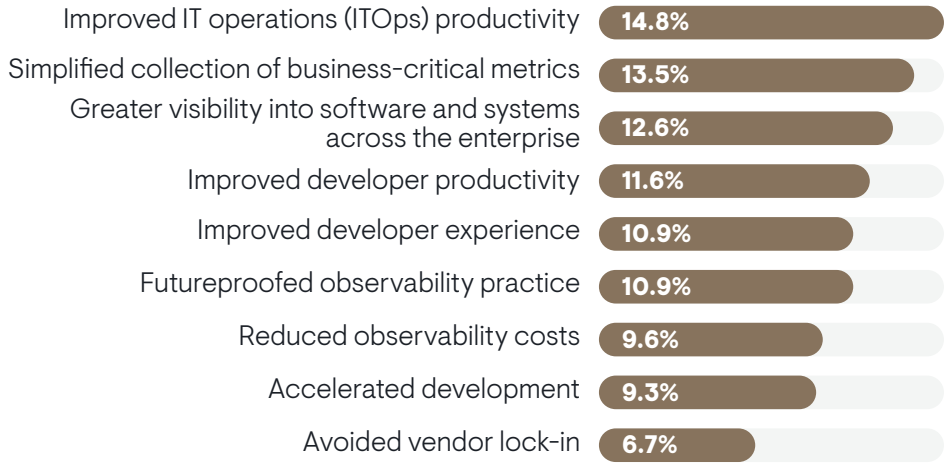


Figure 12

Sample Size = 194, Valid Cases = 194, Total Mentions = 731

OpenTelemetry is seen as advantageous for what it brings to the organization's observability practice, and also as an enabler of observability tools, helping the solutions deliver improved results. According to the survey, observability is the most common solution integrated with OpenTelemetry, and 87% of those using or planning to use it say OpenTelemetry integration is very important when selecting a new observability tool.

A C-level executive in manufacturing explains, "OpenTelemetry helps you streamline your observability efforts, making it easier for teams to optimize performance and troubleshoot issues."

Reduced MTTR and improved user experience are cited as top advantages when observability solutions are supported by OpenTelemetry. In addition, more than one-third of respondents report that OpenTelemetry helps observability tools by reducing application and mobile app response time, a key goal of observability.

When asked how they justify observability tool investments to senior management, the top reasons align directly with the top OpenTelemetry benefits cited by survey respondents, including improved operational efficiency (19.2%), cost savings (17.7%), and improved user experience and customer satisfaction (17.1%).

What benefits does OpenTelemetry help your observability solution deliver?

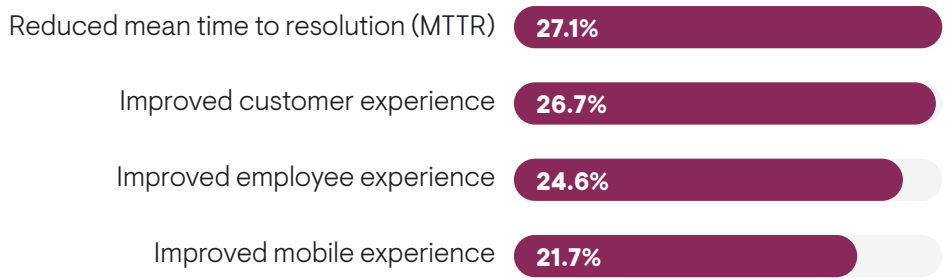


Figure 13

Sample Size = 194, Valid Cases = 194, Total Mentions = 480

How has OpenTelemetry helped your observability solution impact your systems and applications?

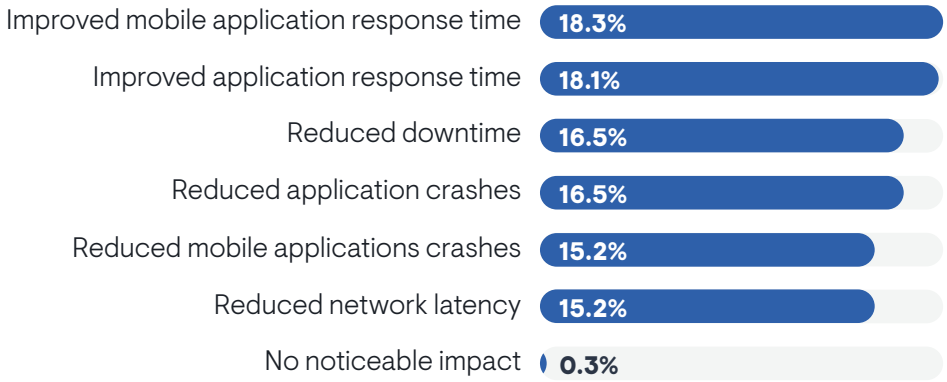


Figure 14

Sample Size = 194, Valid Cases = 194, Total Mentions = 613

Increased Productivity

Improved productivity for ITOps (14.8%) and developers (11.6%) is reported as the primary direct advantage of OpenTelemetry. For those who increased ITOps productivity with OpenTelemetry, about 60% report more than a 20% improvement and another 37% report a 10%-20% improvement. Similarly, for those who increased developer productivity with OpenTelemetry, over 60% report more than a 20% improvement and another 34% report a 10%-20% improvement.

By what percentage did ITOps productivity improve?

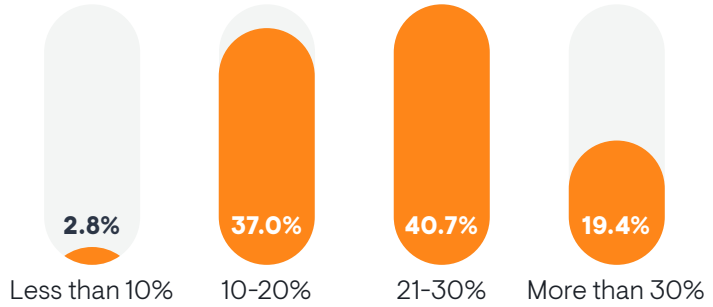


Figure 15

Sample Size = 108

By what percentage did developer productivity improve?

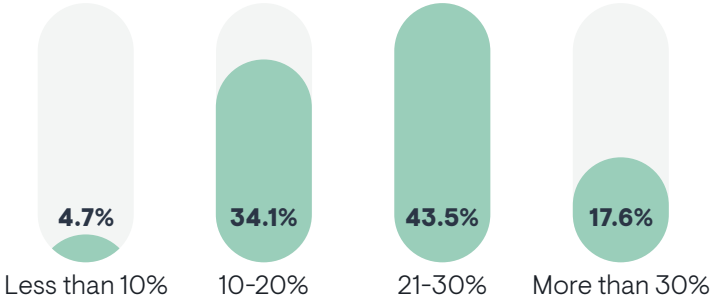


Figure 16

Sample Size = 85

Faster Issue Resolution

Mean time to repair (MTTR) is a vital priority for IT organizations. In the survey, MTTR is chosen as the second-highest metric used to define IT success at the individual and/or team level. A majority (58%) of organizations with mature observability practices prioritize MTTR to define success, and almost half of those with adequate or immature observability use the same benchmark.

When asked about benefits OpenTelemetry helps observability solutions deliver, the number one benefit is MTTR (27%). For those who reduced MTTR with OpenTelemetry, 95% cut issue remediation by at least 10%. Out of that group, 47.7% report more than a 20% improvement in MTTR and another 47.7% report a 10%-20% improvement.

By what percentage did MTTR improve?

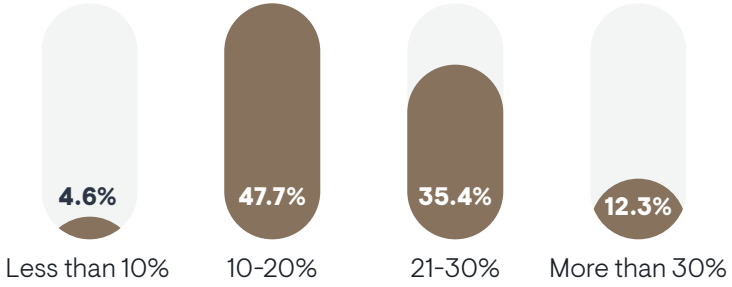


Figure 17

Sample Size = 130

Improved User Experience

User experience—including both customer and employee experience—is also a high priority for most organizations. After reduced MTTR, the top three benefits that OpenTelemetry helps observability deliver are all improvements in user experience: customer experience (26.7%), employee experience (24.6%), and mobile experience (21.7%). Those respondents report improvements such as faster application response time (24.6%), higher satisfaction scores (21.9%), increased engagement time (20.1%), and fewer issues reported by users (17.2%).

Customer satisfaction score is the third-highest metric to define IT success at the individual and/or team level, and half of organizations with mature observability practices use this benchmark. Those that gained user experience improvements attributed to OpenTelemetry's support for observability rank high satisfaction scores (21.9%) as the second-highest benefit. Other improvements cited in relation to user experience include faster application response time (ranked first at 24.6%) and increased user engagement (ranked third at 20.1%).

An IT manager reports, "We are seeing decreases in the need for contact to customer service due to OpenTelemetry. With fewer software issues and performance issues, we anticipate that customers are being retained and service is improved. That's a key measure of our ROI outlook."

A C-level executive in health care concurs, "We are seeing a decrease in tickets and an increase in uptime."

What improvements have you observed in user experience?

Figure 18 Sample Size = 187, Valid Cases = 187, Total Mentions = 517

Enhanced Data Management

The ability to collect and manage data is a running theme in terms of OpenTelemetry benefits. Collecting and correlating data from multiple sources is cited as the number one observability challenge OpenTelemetry addressed, and managing large data volumes is ranked third in this same category. Data quality and accuracy with OpenTelemetry are also mentioned as primary factors driving ROI.

An IT manager in finance explains, "OpenTelemetry allows large data volumes to be collected from different sources and sent to multiple platforms without significant configuration changes," while another adds, "Being able to seamlessly send data to multiple platforms increases our business speed."

Respondents also say OpenTelemetry reduces redundant data collection, provides fast and accurate data processing with extensions and integrations with other applications for data management, and helps optimize the cost of storing, processing, and monitoring data.

The Bottom Line: Solid ROI

With many technologies, it all comes down to return on investment (ROI) in the end, and OpenTelemetry is no different. ROI is the foundation of the business case for OpenTelemetry and the numbers are encouraging. According to the survey, 46.4% of organizations are seeing greater than 20% ROI for OpenTelemetry and another 40.7% are achieving 10%-20% ROI. Only 2.6% of those using OpenTelemetry are not seeing any ROI.

How much ROI is your organization seeing from OpenTelemetry?

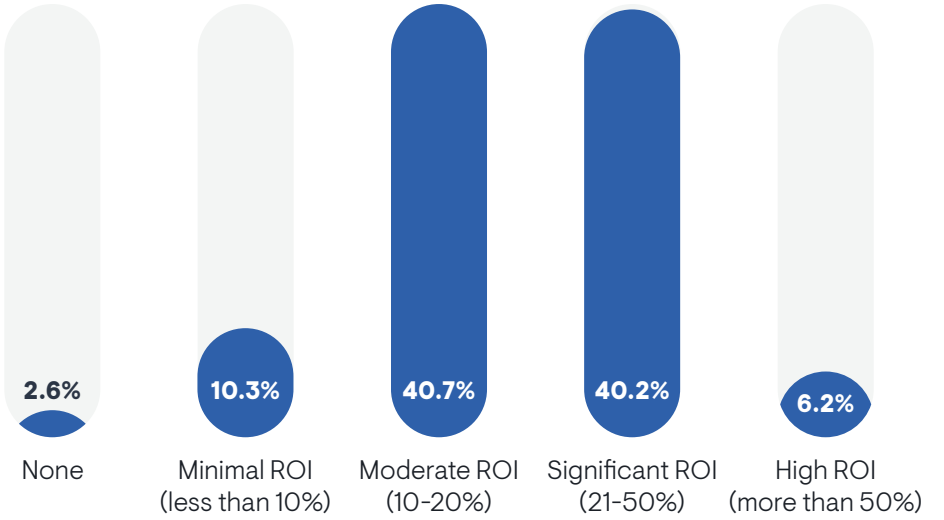


Figure 19

Sample Size = 194

Respondents were asked what drives their OpenTelemetry ROI and the most popular answer is improved observability and monitoring, including faster issue detection and resolution, improved system and application performance, and reduced downtime. A wide range of other ROI drivers are reported as well—echoing the benefits of OpenTelemetry covered in this report—including observability cost savings, avoidance of vendor lock-in, increased efficiency and productivity for both IT operations and development, integration with existing tools, and enhanced customer experience and retention.

In addition, organizations justify OpenTelemetry investment through operational efficiency (19.2%), cost savings (17.7%), and better customer experience (17.1%).

With this in mind, an engineering manager asserts, "OpenTelemetry helps optimize observability costs, improve system performance, and increase development team efficiency, thereby improving ROI."

A development manager puts it simply: "We are able to leverage our technology tools in a way that maximizes profits and reduces operational costs."

Reduced Observability Costs

Reduced observability costs is one of the leading drivers of OpenTelemetry ROI, according to the survey. For those that reduced observability costs with OpenTelemetry, 42% report a decrease of more than 20% and another 42% say costs decreased 10%-20%.

A C-level executive in high tech explains how OpenTelemetry helps reduce observability cost for their team: "Previously, we relied on multiple agents for different data types. Now, the OpenTelemetry unified approach reduces our instrumentation cost by half annually due to simplified deployment and maintenance."

By what percentage did observability costs decrease?

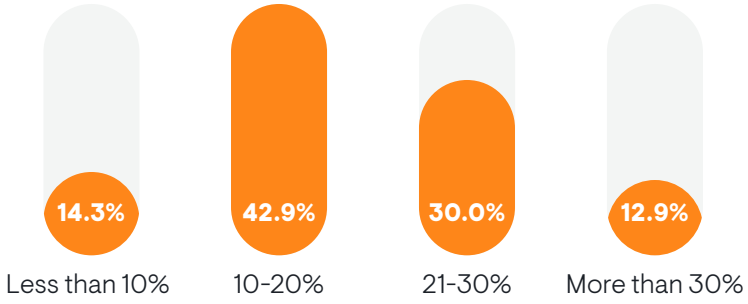


Figure 20

Sample Size = 70

Reduced Vendor Lock-in

Eliminating—or at least mitigating—vendor lock-in is a key advantage of OpenTelemetry that helps reduce observability cost and contributes to ROI.

The nature of open source makes it a blessing and a curse. On the one hand, some respondents express concerns about the lack of vendor support, which is a very common challenge with any open source project. On the other hand, as open source, OpenTelemetry enables users to break vendor lock-in. Prior to the establishment of what is increasingly becoming a universal standard with OpenTelemetry, users had to rely on proprietary agents from vendors—and many still do. After expending all the time and capital implementing vendor agents, users must keep using that same vendor, or start all over again with an alternative and incur more costs. Without interoperability and a standard like OpenTelemetry, it is very hard to switch to another observability tool or use multiple tools. The survey results show that users appreciate how OpenTelemetry empowers them to avoid vendor lock-in and leverage an industry standard that most of the major observability providers have embraced.

When asked how they expect OpenTelemetry to impact observability in the future, 25% of respondents say by reducing vendor lock-in through interoperability and standardization of observability practices across tools and platforms.

What are the primary drivers of ROI from your organization's use of OpenTelemetry? (Summarized from Open End)

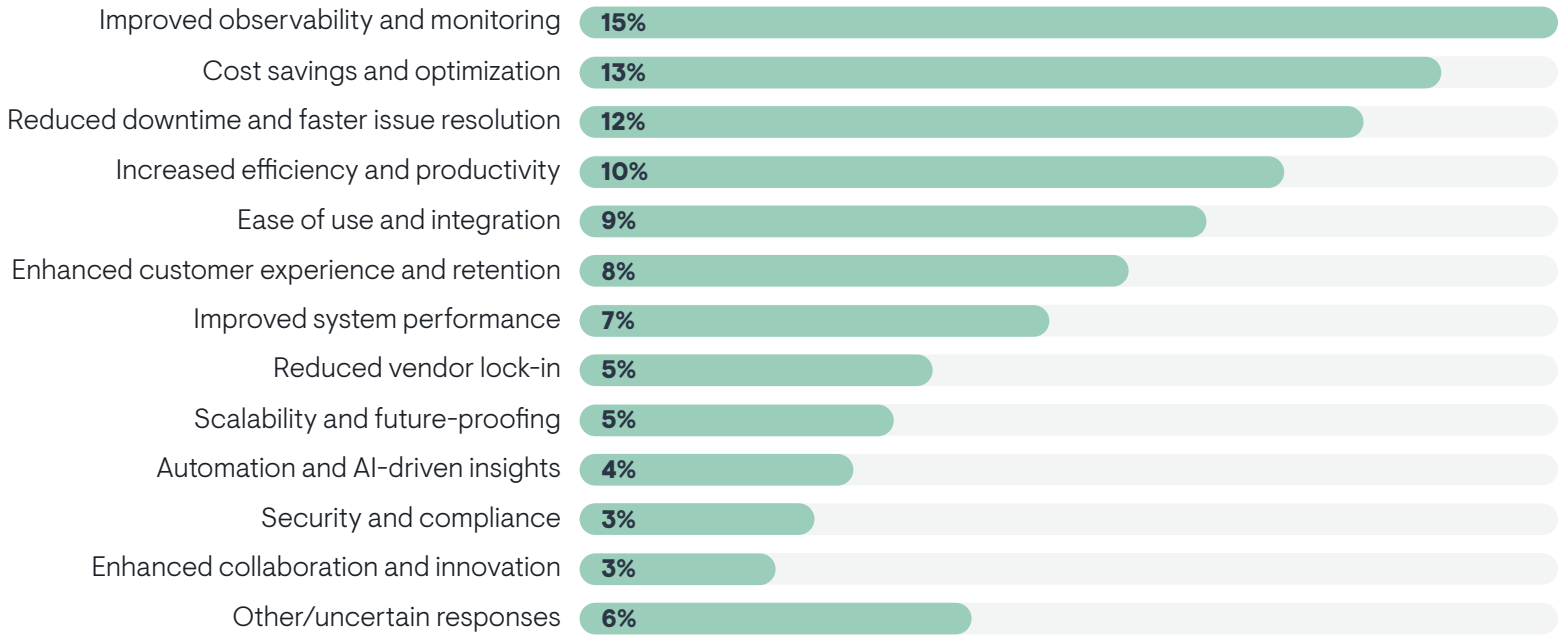


Figure 21

Sample Size = 194

Future Outlook

Considering the adoption rates, favorable perception, and extensive benefits of OpenTelemetry validated by this research, the outlook for the open source project is very strong. In support of this conclusion, about 92% of survey respondents have positive expectations about the future impact OpenTelemetry will have on their observability capabilities, a powerful endorsement of the technology.

What is your expectation for OpenTelemetry's impact on your organization's observability capabilities?

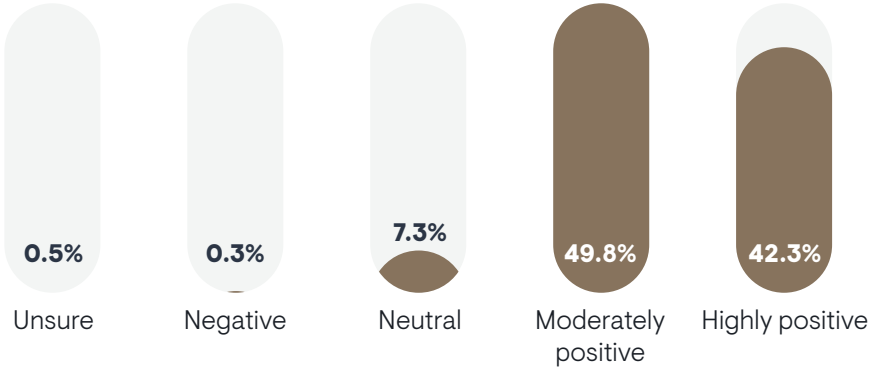


Figure 22

Sample Size = 400

Improved interoperability, integration, scalability, and flexibility, as well as reduced observability costs and simplified telemetry data collection and management, are the top advantages driving these positive expectations.

The most common expectations for how OpenTelemetry will impact observability in the future include improving scalability of observability solutions, simplifying telemetry data collection and integration, reducing observability tooling costs, and standardizing observability practices across platforms.

What factors contribute to your positive expectation of OpenTelemetry?

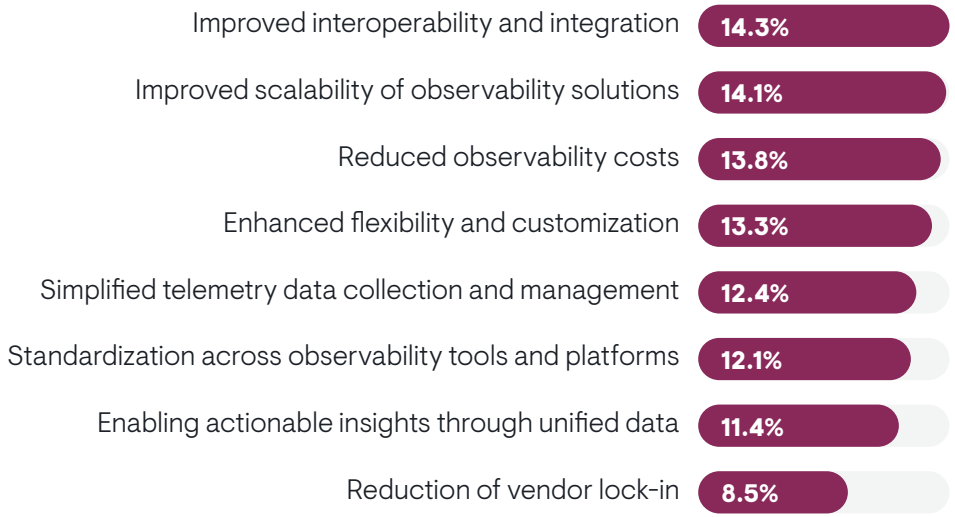


Figure 23

Sample Size = 368, Valid Cases = 368, Total Mentions = 1,276

OpenTelemetry Expansion in the Organization

When asked how their organization plans to expand the use of OpenTelemetry in the next 12-24 months, the most popular plan is to expand coverage across more systems or applications (22.3%). For those who plan to expand coverage, the favored targets are cloud native applications, multi-cloud environments, IoT, and both on-premises and mobile applications.

In addition, 21.7% plan to add more OpenTelemetry components, such as APIs, 19.3% plan to conduct more experimentation, 17.7% plan to expand into mobile app monitoring, and 17% plan to use additional signals, such as metrics, logs, or traces.

For respondents who plan to conduct more OpenTelemetry experimentation over the next 12-24 months, the three most prevalent use cases include real-user monitoring (RUM), mobile application observability, and infrastructure performance visibility.

For those either currently using or planning to implement OpenTelemetry, 67.3% plan to fully instrument their environment with OpenTelemetry, while the remainder will maintain a mixed environment, with some proprietary agents, for the long term.

The Next Signals Expected for OpenTelemetry

OpenTelemetry is an ongoing open source project with continuous potential for improvement. For example, project contributors are working on adding support for several new signals. When asked which observability data types or sources respondents would like to see OpenTelemetry support, the most popular choices are Generative AI (33.7%), real-user monitoring (27.2%), and additional resource utilization monitoring, such as eBPF (23.1%).

What areas or use cases will your organization experiment with when using OpenTelemetry?

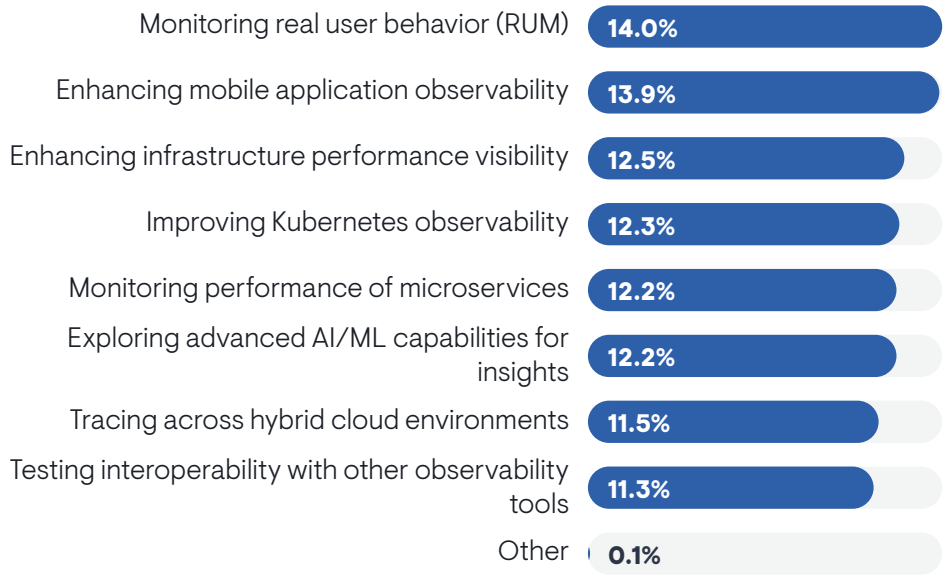


Figure 24

Sample Size = 188, Valid Cases = 188, Total Mentions = 706

EMA Perspective

The insights from this report underscore OpenTelemetry's expanding role in observability, with strong momentum and growth potential. OpenTelemetry is evolving from an emerging standard into an essential enabler of observability.

Leveraging OpenTelemetry as a Competitive Advantage

EMA predicts that the use of OpenTelemetry will become a competitive advantage. For websites, applications, mobile apps, cloud, networks, databases, or other systems, performance is mission-critical. Customers will not tolerate latency or downtime. They will abandon a website or app in seconds if it is slow and go directly to a competitor if the site or app is down. For this reason, performance is a strategic imperative. OpenTelemetry empowers observability tools to collect more data and consequently empowers IT organizations with greater visibility to identify and fix performance issues before they impact end users. Consequently, use of OpenTelemetry can be a key competitive differentiator in any industry.

One of the most consequential points to consider: the survey findings suggest that your competitors have already started using OpenTelemetry to improve digital performance, availability, and the user experience. With this in mind, if you have not already adopted OpenTelemetry, the time to start is now.

Overcoming OpenTelemetry Challenges

The research highlights key barriers to OpenTelemetry adoption and expansion, including complexity of implementation, lack of skilled resources, and concerns about managing large telemetry data volumes. However, the findings also show that organizations are moving forward and overcoming these challenges because the benefits are paying off. OpenTelemetry is worth the effort.

Organizations that want to succeed with OpenTelemetry should invest in training, leverage vendor expertise, and adopt best practices for managing and analyzing telemetry data efficiently.

In addition, organizations may want to approach implementation with a phased strategy, because OpenTelemetry's maturity varies depending on the component and continually evolves. Start with the most mature components first and gradually expand as the project develops. OpenTelemetry should be treated more as a journey than a destination.

Choosing the Right Observability Vendor

One of OpenTelemetry's most compelling advantages is the avoidance of vendor lock-in for observability data collection. However, OpenTelemetry is not a standalone observability solution. Organizations still depend on vendors for observability platforms or other solutions for analysis, visualization, and storage. EMA's perspective is that integration with OpenTelemetry should be a prerequisite for observability platforms and related tools. Vendors that embrace the standard and seamlessly incorporate telemetry data via OpenTelemetry will be the most viable observability providers.

Organizations should evaluate observability vendors not only on whether they integrate OpenTelemetry, but also on the depth of that integration, the vendor's commitment to ongoing OpenTelemetry contributions, and their ability to advise customers on OpenTelemetry implementation.

Vendor support for OpenTelemetry is strong, showing broad industry acceptance for the standard and technology. Organizations assessing observability solutions should examine how involved the vendors are in terms of helping build the technology, and also within the OpenTelemetry community.

Reinforcing Data Management and Storage for OpenTelemetry

According to the survey results, OpenTelemetry makes collecting performance data much easier and more cost-effective, so use of this technology will likely increase the volume of telemetry data in any use case. The results also show that some organizations are struggling with this aspect of OpenTelemetry. To maximize OpenTelemetry benefits, EMA recommends that organizations strengthen their ability to process, analyze, and store data by choosing trustworthy backend solutions capable of supporting the volume of data OpenTelemetry generates.

Maximizing the Value of OpenTelemetry with AI

AI will shape the future of observability and OpenTelemetry will play a crucial role in delivering data to fuel AI-driven insights. As telemetry data grows in volume and complexity, especially due to the use of OpenTelemetry, AI will be essential in surfacing the right insights at the right time. For this reason, organizations should choose vendors with product roadmaps that incorporate AI-driven observability.

Strategic Recommendations for Organizations and Vendors

For Organizations

- **Start implementing OpenTelemetry now**, if you have not already. Prioritize OpenTelemetry as a long-term observability investment.
- **Invest in OpenTelemetry skills.** The lack of skilled resources is one of the most common adoption barriers. Organizations should prioritize training and knowledge-sharing across IT teams.
- **Plan for scalability and data management.** OpenTelemetry generates significant volumes of data, and organizations need the right strategies, tools, and capacity to efficiently store, process, and analyze telemetry without overwhelming systems.
- **Select vendors that fully support OpenTelemetry.** Not all integrations are equal—organizations should work with vendors that actively contribute to OpenTelemetry's development and offer deep integration.
- **Leverage AI to maximize OpenTelemetry's value.** AI-driven analytics will be critical in extracting meaningful insights from OpenTelemetry data.

For Vendors

- **Remain committed to OpenTelemetry integration.** As enterprises migrate to OpenTelemetry-based telemetry collection, observability vendors must offer deep, seamless, and value-added integration to remain competitive.
- **Contribute to the OpenTelemetry project.** Observability leaders and innovators are the top contributors to OpenTelemetry, and this distinction will become a differentiator in the observability market in the near future.
- **Engage with the OpenTelemetry community.** Offer the market OpenTelemetry-related education and thought leadership to attract and educate customers and increase brand awareness in relation to OpenTelemetry.
- **Align your product roadmap with OpenTelemetry evolution.** While OpenTelemetry started with logs, metrics, and traces, the future includes real user monitoring (RUM), eBPF, security, AI observability, and more. Vendors should support these emerging OpenTelemetry signals.
- **Balance observability with cost optimization.** The survey findings show that observability expenses are a major concern for users, and they are actively looking for more cost-effective alternatives.

Final Thoughts

OpenTelemetry is no longer an experiment—it's an enterprise-ready standard with a suite of complimentary tools that is reshaping how IT organizations manage performance, reliability, and user experience. Organizations that successfully harness the power of OpenTelemetry will outperform the competition in service reliability and customer satisfaction.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading IT research and consulting firm dedicated to delivering actionable insights across the evolving technology landscape. Through independent research, market analysis, and vendor evaluations, we empower organizations to make well-informed technology decisions. Our team of analysts combines practical experience with a deep understanding of industry best practices and emerging vendor solutions to help clients achieve their strategic objectives. Learn more about EMA research, analysis, and consulting services at **www.enterprisemanagement.com** or follow EMA on **X** or **LinkedIn**.

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