

JANUARY 2026

Achieving Monitoring Consistency and Repeatability With OpenTelemetry and IBM Instana

Alex Arcilla, Principal Analyst – Validation Services

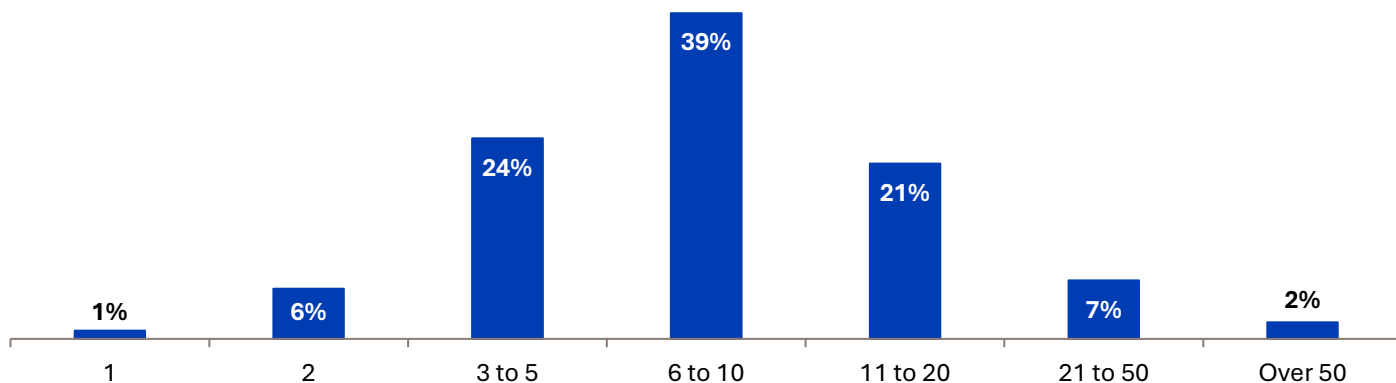
Observability Challenges

Within today's highly distributed environments, spanning on-premises data centers, public clouds, and edge networks, organizations are taking advantage of different architectures to support their applications, based on a variety of technical and business requirements. In fact, research from Enterprise Strategy Group (now Omdia) uncovered that applications are distributed nearly equally (within a few percentage points) across virtual machines (VMs), containers, serverless platforms, and bare-metal servers.¹

Dealing with the variety of application architectures, coupled with the underlying environment, has prompted organizations to implement numerous observability platforms. Currently, 39% of research respondents stated that they use 6 to 10 observability platforms for achieving end-to-end management and monitoring (see Figure 1). Yet, using multiple observability platforms leads to unwanted tool complexity that increases mean time to resolution (MTTR), as organizations need to correlate observations generated by vendor-specific tools, interfaces, and metrics before identifying root causes.

Figure 1. Use of Multiple Observability Tools Remains the Norm

Approximately how many separate observability-related tools and platforms does your organization use? (Percent of respondents, N=377)



Source: Omdia

¹ Source: Enterprise Strategy Group (now Omdia) Research Report, *Transforming Observability and Monitoring Through AI*, April 2025. All Enterprise Strategy Group research references and charts in this Technical Validation are from this report.

Achieving consistent and repeatable observability across multiple environments has been found to be among the most time-consuming observability tasks, according to our research. This is no surprise, as vendor-specific tools gather, process, and present data differently. When locating and identifying application performance issues, cross-referencing data from multiple tools requires time and manual effort, ultimately resulting in excessive MTTR.

What if organizations could standardize the collection, processing, and export of data to various backends? Not only would this simplify implementation, but, more importantly, it would facilitate faster data correlation when locating, identifying, and resolving application performance issues. Such standardization will most likely not originate within the commercial space. On the other hand, the open source community offers an approach that can deliver consistent and repeatable observability, ultimately helping decrease overall MTTR.

Solution – OpenTelemetry Support in IBM Instana

To support organizations in standardizing observability across their hybrid clouds, IBM is embracing the use of OpenTelemetry (OTel) with IBM Instana, a solution that provides end-to-end observability and monitoring capabilities for customer-facing and internal web and mobile applications. OTel is an open source telemetry framework designed to provide vendor-neutral tools, APIs, and SDKs for collecting, processing, and exporting telemetry data such as traces, metrics, and logs from applications and their underlying architectures. This framework standardizes how telemetry data is gathered and delivered to different backends, whether they are open source tools (e.g., Grafana and Jaeger) or commercial offerings.

Using this instrumentation and data pipeline standard, organizations can develop an automated, consistent, and repeatable monitoring experience and telemetry data format across hybrid clouds. The low-code approach and understandable syntax simplify the adoption of this framework.

OTel employs a collector approach for gathering and exporting telemetry data. Whether acting as agents sitting on the same host as the application or a centralized gateway, OTel gathers, filters, and prepares data before exporting to the desired backend. With this centralized architecture, organizations can experience simplified deployment and scalability while maintaining data security. In addition, the standardized data format enables IBM Instana to identify the relevant and strongest correlations that point to the most likely root cause.

Leveraging OTel can deliver the following benefits:

- Standardization via consistent coding practices using APIs and SDKs in various languages, regardless of the observability application's language or the observability backend.
- Portability that enables organizations to export data to any OTel-compliant backend, preventing vendor lock-in.
- Enhanced observability that delivers deeper insights into application behavior and performance, specifically at the architecture level.

Organizations using IBM Instana can leverage Instana Distro of Otel (iDOT), which builds upon the community-based OTel version. Support is available for agents and collectors using Linux, Kubernetes, Linux

Z, and AIX operating systems. With IBM's commitment to OTel, organizations can expect ongoing IBM involvement with the OTel community via its code contributions. IBM has also committed to learning from the OTel community for future roadmap development. Organizations choosing iDOT can also receive enterprise-level 24/7 support, removing the need to rely on the OTel community for fixes. iDOT also offers tested and validated components, predictable operations, and long-term stability, making open source OpenTelemetry safe and reliable for mission-critical production environments.

With the combination of IBM Instana and iDOT, organizations can achieve the breadth and depth of end-to-end observability needed in distributed environments. IBM Instana is already designed to isolate and prioritize application performance and availability issues based on their impact on the business (e.g., tying usage metrics to revenue). Combined with iDOT, IBM Instana customers can achieve deeper insights into application performance and behavior as revealed by the telemetry data. IBM Instana can also correlate application and architecture data to reduce MTTR. Faster resolution translates into lower downtime and operational costs.

First Look

To validate the benefits that organizations can experience with the combination of IBM Instana and OTel, Omdia evaluated the ease of deploying the OTel framework and the data correlations that IBM Instana can generate using OTel's standardized data format. We first reviewed the code used to configure and deploy the OTel framework (see Figure 2).

Figure 2. Observability-as-Code – OTel Configuration in YAML

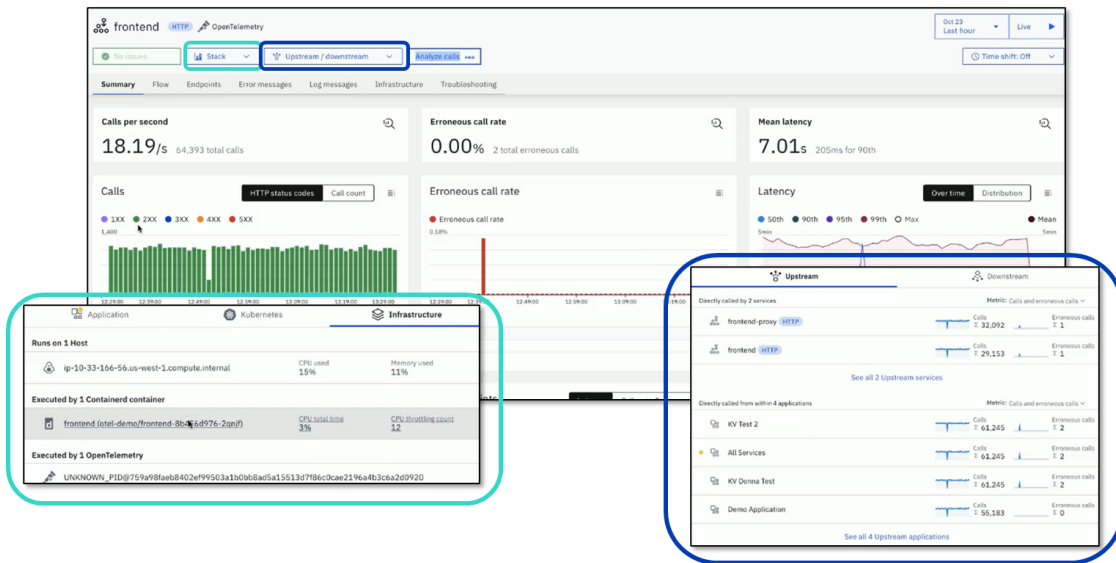
```
service:
  pipelines:
    traces:
      receivers: [otlp]
      processors: [batch, resource]
      exporters: [debug, spanmetrics, otlp/instana]
    metrics:
      receivers: [otlp, spanmetrics]
      processors: [batch, resource]
      exporters: [debug, otlp/instana]
```

Source: Omdia

Omdia reviewed how organizations simplify collector configuration and automated setups across distributed environments. For example, Figure 2 shows the components of a pipeline, which defines the flow of telemetry data (traces, metrics, logs) through an OTel collector. A pipeline consists of receivers (which collect data), processors (which filter and transform data), and exporters (which direct data to the defined backend). Changes to any parameter are applied immediately using the fleet of deployed collectors supported by the Open Agent Management Protocol (OpAMP), the open standard/protocol for collector management. This approach decreases configuration time and effort as collectors can be defined and modified centrally from a single code base, regardless of the underlying environment. On the other hand, agents with vendor-specific solutions would be configured individually and deployed onto every application and system to be monitored.

To validate how IBM Instana and OTEL complement each other, Omdia examined how the Instana interface understood OTEL's convention in labeling data out of the box and mapped that data into the metrics shown. Data was collected and displayed from both an application stack perspective (application, Kubernetes, infrastructure) and with upstream/downstream dependencies.

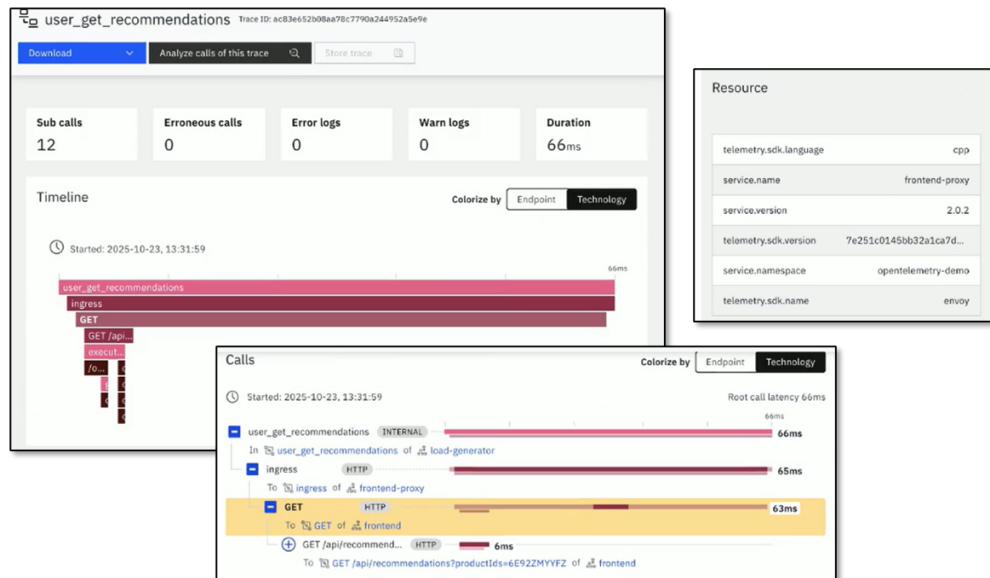
Figure 3. How IBM Instana Displays and Correlates OTEL Data



Source: Omdia

Using Dynamic Graph correlation, Omdia observed how IBM Instana can automatically generate correlations between the OTEL standardized data to locate and determine root cause(s) of application issues (see Figure 4). In a single screen, we saw how the generated correlations were presented as a graphical timeline, illustrating the commands executed as spans. The same screen also showed latencies recorded and listed data sources. Accessing these correlations at a granular level helps to decrease overall MTTR, as IBM Instana details events across all levels of the application stack; the manual work of gathering and correlating data from multiple systems and interfaces is significantly reduced.

Figure 4. Automated Data Correlations

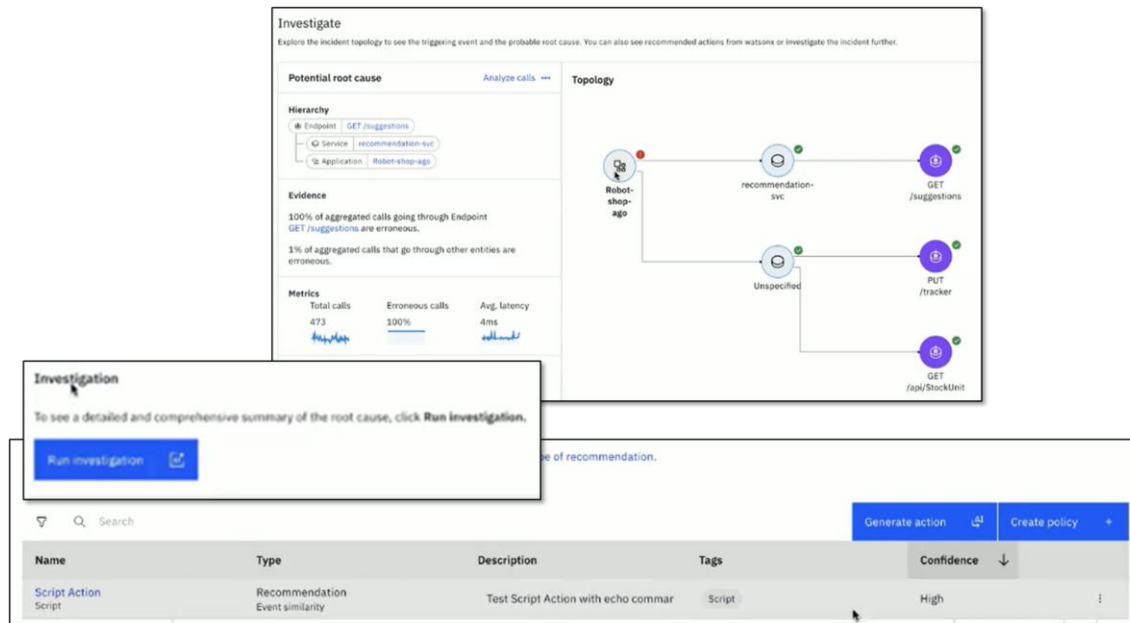


Source: Omdia

After seeing how IBM Instana automatically correlates OTel data, Omdia observed how IBM Instana leverages AI to resolve issues. Because IBM Instana has achieved repeatable observability with OTel, the AI behind IBM Instana can determine the most appropriate resolution, especially as AI learns when similar issues occur. Once the AI learns how and when a specific issue arises, a resolution can be automatically generated.

Figure 5 shows how AI supports issue resolution in IBM Instana. Omdia prompted IBM Instana to investigate a recent incident, resulting in an incident topology, generated using IBM Instana's Dynamic Graph Correlation, and a list of possible root causes. Prompting AI to generate a resolution only required clicking the "Run Investigation" button, resulting in a generated script. Omdia noted that we could either run the script once or formally assign it to a recorded action that would automatically execute should the same incident arise again. Omdia noted how this AI application can further decrease MTTR, not only for this issue but also for similar issues encountered going forward.

Figure 5. Instana AI-driven Investigations



Source: Omdia

Conclusion

Consistent and repeatable observability is key to reducing MTTR, thereby decreasing overall downtime. In the quest for this, organizations have employed multiple observability tools to achieve the breadth and depth of end-to-end observability needed to understand how and why incidents occur.

When using disjointed observability solutions, organizations must gather data from all layers of the application stack, then correlate that data manually to arrive at possible root causes. Such time and effort spent on investigation leads to increased MTTR, as tool-specific data needs to be understood before an organization can attempt to uncover dependencies. Reducing MTTR requires consistent and repeatable observability, which can be achieved when data collection and processing are standardized. This translates into granular data correlations that facilitate automatic investigations and root cause analysis.

The combination of IBM Instana and OTel (with IBM’s iDOT) is designed to deliver the breadth and depth of observability organizations need to monitor applications deployed across distributed environments. Instead of relying on multiple vendor-specific tools designed for individual application architectures or underlying environments (on-premises, public clouds, and edge networks), organizations can leverage IBM Instana and OTel to achieve consistent and repeatable observability. Using this combined solution helps organizations reduce MTTR, as they can perform granular-level investigations via automated correlations and arrive at possible root causes.

Omdia’s First Look at the use of OTel with IBM Instana validated that organizations can reduce operational costs and increase overall downtime by:

- Simplifying the centralized implementation of OTel via the low-code approach with a more readable syntax
- Decreasing the time for investigation with Dynamic Graph correlations using the OTel standardized data
- Reducing time to resolution with the automated investigations and resolutions fueled by IBM Instana's AI capabilities

The pace of business change requires the supporting applications and their underlying architecture to evolve continuously. Preventing unnecessary downtime requires organizations to maintain observability that can easily deliver the insights needed when issues arise and facilitate quick resolution. Our evaluation of IBM Instana with OTel reveals that the combination can address these challenges. We urge a closer look, should you face the operational complexity of working with multiple disjointed observability tools.

Copyright notice and disclaimer

The Omdia research, data, and information referenced herein (the "Omdia Materials") are the copyrighted property of TechTarget, Inc. and its subsidiaries or affiliates (together "Informa TechTarget") or its third-party data providers and represent data, research, opinions, or viewpoints published by Informa TechTarget and are not representations of fact.

The Omdia Materials reflect information and opinions from the original publication date and not from the date of this document. The information and opinions expressed in the Omdia Materials are subject to change without notice, and Informa TechTarget does not have any duty or responsibility to update the Omdia Materials or this publication as a result.

Omdia Materials are delivered on an "as-is" and "as-available" basis. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness, or correctness of the information, opinions, and conclusions contained in Omdia Materials.

To the maximum extent permitted by law, Informa TechTarget and its affiliates, officers, directors, employees, agents, and third-party data providers disclaim any liability (including, without limitation, any liability arising from fault or negligence) as to the accuracy or completeness or use of the Omdia Materials. Informa TechTarget will not, under any circumstance whatsoever, be liable for any trading, investment, commercial, or other decisions based on or made in reliance of the Omdia Materials.

Get in touch: www.omdia.com askananalyst@omdia.com

