Enhancing Observability in Hybrid and Multi-Cloud Environments

Developing centralized observability capabilities will help ensure the success of cloud deployments.

According to a recent study, the adoption of observability practices and tools is accelerating as many organizations are choosing more holistic and investigative observability solutions over traditional monitoring platforms.[1] This study projects that the acceleration in adoption will boost the observability market by 11% yearly, to reach a market value of $28 billion by 2027. The shift to observability solutions over monitoring ones is driven, in part, by the complexity that hybrid-cloud and multi-cloud management add to infrastructure and application management. Observability platforms help by providing a decomposed form of events, logs, and traces that integrate distributed system components, interactions, and data to help investigate the root causes of issues.

While organizations traditionally adopted cloud-specific tools to manage infrastructure and applications within each cloud environment, this increased the effort and costs for managing full multi-cloud deployment. This also often led to multiple and duplicated tools, gaps in monitoring coverage, security vulnerabilities, and siloed data, all of which have direct impacts on the health of the system and underlying technologies in the cloud. These impacts, in turn, can affect customer service delivery and the business's bottom line.

Setting up a technology-agnostic centralized infrastructure and application observability strategy as a foundational part of an organization's cloud strategy benefits both platform and site reliability engineering (SRE) teams by allowing them to manage operations holistically and proactively across on-premises, public, and private clouds. These integrated monitoring solutions are called centralized observability platforms or application performance management platforms. They allow for a single-plane-of-glass (SPOG) view, in which a centralized, enterprise-wide dashboard provides visibility into various sources of data to create a single source of truth by consolidating health and data performance across applications, networks, and enterprise cloud technologies.

Implementing centralized observability tools and principles provides more transparency into multi-cloud environments, reduces the IT burden, improves performance and uptime, increases cloud security, accelerates emergency response, and boosts business agility.

Common Hybrid and Multi-Cloud Observability Use Cases:

- **DevOps/AppDev:** Application debugging and distributed profiling (ADDP), as well as application performance monitoring and multi-cloud data management.
- **Digital Experience Monitoring:** User-behavior analysis and experience monitoring, including monitoring of key performance indicators (KPIs) and user journeys.
- **Line of Business:** Analysis of business services and the impact of infrastructure performance on business outcomes.
- **IT Operations:** IT service and infrastructure monitoring, including cost monitoring, performance monitoring, and capacity synthesis.
- **SRE/Platform Operations:** Root-cause analysis (RCA) of system exceptions.
- **Security and Compliance Monitoring:** Vulnerability detection and runtime application self-protection (RASP).

[1] Cruz, Paige. "Analyst report: Observability platforms increase in popularity." *Chronosphere*, March 26, 2024. https://chronosphere.io/learn/analyst-report-observability-platforms-increase-in-popularity

Building a Centralized Observability Capability and Strategy

Observability capabilities allow organizations to approach manage and monitor more holistically and proactively their disparate suite of technologies including infrastructure, components, cloud-aware applications, data management operations, and artificial intelligence (AI) solutions. Observability tools and processes provide a centralized and atomistic view across platforms that allows organizations to recognize patterns and react faster to everything from security incidents to performance. This affects virtually every area of the business, including financial and deployment considerations, like cloud cost efficiency, and external KPIs, like the quality of the customer experience.

Developing a centralized observability capability and strategy will help ensure the success of cloud deployments and the on-going management of these solutions. To create an effective observability framework, start with business requirements and then work backward to create an organizational policy and strategy around observability. Those requirements can then be used to determine what factors should be monitored and what observability tools and platforms are best suited for monitoring them. For example, an organization might have a business requirement for 99% uptime and a plan to integrate AI into their business in the next two years. Those factors are critical starting points for planning an organization's observability strategy.

Here is the process for creating an observability capability and strategy:

- **PREPARE:** Work with internal business and technology stakeholders to select a monitoring model, define the scope and criticality of the services to be monitored, assign ownership of the resources, and select potential cloud service providers or third-party monitoring tools and third-party observability platforms.
- **DEVELOP STRATEGY:** Determine the business and technical requirements that the observability capability and function should support. Build a strategy backward from those requirements with standards for user-activity, resource-usage monitoring, and event-management.
- **DEVELOP POLICY:** Define common monitoring policies regarding metrics, KPIs, and resource-utilization thresholds. Create cloud-specific monitoring policies for each environment.
- **DEVELOP METRICS AND MONITORING:** Develop meaningful and consistent analytics and establish regular reporting on cloud workloads. Generate persona-based and shared dashboards and visualizations.
- **IMPLEMENT AND IMPROVE CONTINUOUSLY:** Enable dashboards, reports, alerts, and integrations with service-management tools. Regularly identify opportunities for improvement in performance and usage monitoring.

Levels of Observability Maturity

L4 Federated Observability

- Any data available to any consumer on-demand
- Highest business impact at lowest possible cost.

L3 Intelligent Observability

- AI/ML algorithims look for patterns signaling errors
- Correlations and remediation workflows driven by AI

L2 Full-stack Observability

- Contextualize telemetry data (MELT)
- Root cause analysis, topology-based correlation

L1 Observability

- Determine why the system is not working
- Metrics, logs, traces, dashboard, alarms

L0 Monitoring

- Make sure that each component is operating correctly
- Performance, capacity, availability, events, alerts

Observability is a foundational framework when building multi-cloud or hybrid-cloud environments.

Benefits of Implementing Centralized Observability

Building observability capabilities and platforms can help measure and improve the user experience and key business metrics, but there are several other key advantages to implementing centralized observability models.

- Standardized cloud architecture and monitoring configurations.
- Centralized processes.
- Consolidation of metrics and logging.
- Proactive auto-healing.
- Less manual intervention and alert fatigue.
- Faster emergency response.
- More secure systems architecture and better vulnerability detection.
- Reduced downtime risk.
- Better FinOps/financial management as costs are assigned to each team automatically.
- Time savings.
- Shorter time to market.
- Enhanced digital experience.
- Improved future technology planning.

How Guidehouse Can Help

Observability is a foundational framework when building multi-cloud or hybrid-cloud environments.

Guidehouse has extensive experience building observability capabilities and frameworks across multi-cloud and hybrid-cloud environments for government and enterprise clients. Guidehouse's cross-functional expertise across cloud platforms, emerging technologies, cloud strategy, and IT monitoring infrastructure helps us develop centralized observability frameworks that support each organization's business goals and optimize and protect their cloud deployments.

Contact

Robert Partee, Partner
Digital
rpartee@guidehouse.com

About Guidehouse

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