Monitoring and Observability for Development and DevOps

Module 4 Glossary: Observability and Concepts

Welcome! This alphabetized glossary contains many of the terms in this course. This comprehensive glossary also includes additional industry-recognized terms not used in course videos. These terms are essential for you to recognize when working in the industry, participating in user groups, and participating in other certificate programs.

Term	Definition
AIOps	Coined by Gartner, AIOps (artificial intelligence for IT operations) is the application of artificial intelligence (AI) capabilities, such as natural language processing and machine learning models, to automate and streamline operational workflows.
Atatus	A distributed tracing tool that provides detailed insights into how requests flow through a distributed system. It offers real-time data visualization and analytics, enabling developers to resolve issues that could impact user experience quickly.
AWS CloudWatch	A monitoring service provided by Amazon Web Services (AWS) that provides metrics on resources and applications running on AWS.
Cloud-native	The CNCF describes cloud-native computing as the process of creating and deploying scalable applications on cloud computing platforms using open source software as well as technologies like containers, microservices, and service mesh.
Cloud native observability	The practice of monitoring and understanding the behavior of cloud-native applications running in dynamic and distributed environments
Cloud native observability tools	Organizations leverage cloud native observability tools to redress application performance issues with business context and take insight-driven actions. An effective cloud native observability tool focuses on comprehensive visibility and empowers technologists to ensure a seamless user experience.
CI/CD	CI/CD stands for continuous integration and continuous delivery. CI/CD establishes a quicker and more accurate way of combining the work of multiple people into a single cohesive product.
CNCF	Cloud Native Computing Foundation
Container-based applications	Applications that run in isolated runtime environments called containers.
Container orchestrator	Automates the provisioning, deployment, networking, scaling, availability, and lifecycle management of containers.
Datadog	A comprehensive monitoring and analytics platform offering real-time metrics, logs, and traces for cloud-based applications.
Distributed tracing	A technique of observing requests transmitted through distributed cloud environments.
Dynatrace	An end-to-end observability platform that provides an entire observability toolkit from log management, infrastructure monitoring, and application performance monitoring (APM).
Error telemetry	Provides information about errors that occur within the application, including stack traces and error messages.
FluentD	A logging system designed to be decoupled from the backend system. It solves the incompatibility problem by unifying logging formats and routines through its unified logging layer.
Google Cloud Monitoring	A monitoring service by Google Cloud Platform, or GCP, that provides visibility into infrastructure and application performance across GCP services.
I&O teams	Infrastructure and operations or I&O teams are generally responsible for the administration and management of technology, information, and data.
Instana	An application performance monitoring (APM) tool that provides real-time visibility into the performance of cloud-native applications.
Jaeger	A project under CNCF that aims to address the challenges of developing distributed systems by providing tracing capabilities.
Kubernetes	An open-source container orchestration platform that automates deployment, management, and scaling of containerized applications.
Logs	Records of events, typically in textual or human-readable form.
Metrics	A kind of real-time operating data accessed through an API using a pull or polling strategy or as an event or telemetry generated, such as a push or notification.
Mezmo	They were formerly known as LogDNA. It helps developers and IT teams monitor and analyze the performance of their applications and infrastructure.
Microservices	Microservices are a way to manage complexity once applications have gotten too large and unwieldy to be updated and maintained easily.
Monitoring	The continuous collection and analysis of metrics and logs to assess the health, performance, and availability of a system or application.
New Relic	A full-stack, all-in-one, cloud-based observability platform that provides insights into application performance, infrastructure health, and user experience.
Observable system	Provides sufficient information about its internal workings to allow operators and developers to diagnose issues and understand how it behaves under different circumstances.
Observability	A term used in engineering and computer science to describe the ability to understand the internal state of a system using its external outputs.
Performance telemetry	Provides information about how the application is performing in terms of response time, throughput, and resource utilization.
Prometheus	It is a popular observability-related project under the CNCF umbrella for monitoring and alerting purposes.
Random sampling	Random sampling is a technique where a subset of items (such as log records) is chosen from a larger set, ensuring that each item has an equal and independent chance of being selected.
RED	Response, Error, and Duration
Sampling	Logging is collecting only a subset of log events for analysis or storage. Instead of logging every single event or piece of data, a subset is selected randomly or by some other criteria for recording.
Sampling strategies	Refer to the techniques for selecting a subset of log records for analysis and storage.
Security telemetry	Provides information about security events, such as failed login attempts or unauthorized access attempts.
Smart Alerts	Smart Alerts provide automatically generated alerting configurations to receive alerts based on out-of-the-box blueprints such as website slowness, JavaScript errors, and HTTP status codes.
Spans	Represent a particular step in the request's journey and is encoded with crucial data, such as tags, queries, intricate stack traces, logs, and context-giving events.
SRE	Site reliability engineering (SRE) uses software engineering to automate IT operations tasks - e.g., production system management, change management, incident response, and even emergency response - that would otherwise be performed manually by systems administrators (sysadmins).
SRE golden signals	Latency, traffic, errors, and saturation or utilization of the system
Size-based sampling	Selects log records based on their size, such as selecting only records that exceed a certain threshold.
Telemetry	Telemetry collects and transmits data from remote or inaccessible sources to be monitored and analyzed.
Thanos	Enables unlimited storage capacity for Prometheus deployments, allowing organizations that are utilizing multiple Prometheus servers and clusters access to global metrics views.
Three Pillars of Observability	Logs, metrics, and traces
Time-based sampling	Selects log records at fixed time intervals, such as every minute or every hour.
Traces	These are records of the information pathways or workflows created to follow a work item, like a transaction, through the steps that application logic instructs it to take.

Tracing	For container-based applications, it involves capturing and analyzing the flow of requests between different application components.
Usage telemetry	Provides information about how users are interacting with the application, such as which features are being used most frequently and which ones are ignored.
Weighted sampling	Assigns weights to log records based on their importance or relevance and then samples accordingly.
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