

Agent Observability on Google Cloud

This course provides an applied, intermediate guide to operationalizing AI agents, focusing specifically on achieving production confidence and cost predictability for Gemini-powered workflows on Google Cloud. Participants will learn the methodology and actionable skills necessary to transform non-deterministic agent logic into transparent, auditable, and scalable systems.

The course covers core operational disciplines, including mapping the agent's complex thought process (ReAct loops) to Cloud Trace Spans for debugging, implementing Logs-Based Security Metrics for compliance, and setting up actionable alerts and custom dashboards in Cloud Monitoring to proactively control cost overruns and quality drift. The course uses presentations, Visual Walkthroughs, and strategic discussions to ensure effective learning that is directly applicable to the Agent Platform ecosystem.

**DURATION**

3 hours

**LEVEL**

200 - Intermediate

**FORMAT**

Instructor-led

**SCALABLE**

1-50, scaled to 1000

What you'll learn

- Trace non-deterministic agent logic using Cloud Trace Spans and the ReAct loop.
- Implement cost and quality controls using custom Cloud Monitoring dashboards.
- Establish a continuous quality loop with Golden Test Cases.
- Implement governance and auditability using Logs-Based Security Metrics.
- Align technical observability metrics with Business KPIs (Cost, ROI).

Overview

Who this course is for

- **AI/ML Engineer:** Needs to understand how trace data (ReAct Spans) helps debug non-deterministic reasoning and how to measure quality metrics (Hallucination Rate) for strategic decisions.

Data Scientist: Needs visibility into performance trends, evaluation results (Golden Test Cases), and compliance issues to ensure the agent's ethical behavior and data integrity.

SRE/DevOps Engineer: Responsible for operationalizing the agent. Needs to know how to adapt monitoring for cost spikes, implement P99 latency alerts, and manage deployment trade-offs (Agent Engine vs. Cloud Run).

The course is also intended for intermediate technical staff, technical leads, and MLOps Engineers, or anyone involved in designing, implementing, or managing the observability, governance, or production scaling of Gemini-powered agentic workflows on Google Cloud.

Products

- Google Cloud Observability
- Gemini Enterprise
- Agent Engine Threat Detection
- Agent Runtime on Gemini Enterprise Agent Platform
- Agent Studio on Gemini Enterprise Agent Platform
- Access Context Manager
- AI Perimeter Policy
- Cloud Trace
- Cloud Monitoring
- Cloud Logging
- Cloud Billing
- VPC Service Controls

Prerequisites

- **Foundational Knowledge (Mandatory):** Familiarity with foundational Machine Learning (ML) concepts, specifically the distinction between models and agents.
- **Foundational Knowledge (Mandatory):** Experience with Google Cloud concepts and services, including basic navigation of the Google Cloud console.
- **Foundational Knowledge (Mandatory):** Familiarity with software development principles and development lifecycles (DevOps/MLOps).
- **Highly Beneficial (Recommended):** Experience with the Google Cloud CLI and Agent Platform services.
- **Highly Beneficial (Recommended):** Basic understanding of Git/version control knowledge as it relates to deploying code.

	• Highly Beneficial (Recommended): Familiarity with structuring logs (e.g., JSON) and setting up basic monitoring alerts.
Not covered	• In-depth agent development using ADK (Agent Development Kit), LangChain, or direct model prompting. • Advanced machine learning theory or the internal architecture of Gemini models. • Hands-on creation of custom tools or APIs for agents. • Security Operations (SecOps) procedures beyond the scope of a network security professional's responsibilities.

Module 01

The Google Cloud Observability Foundation

Topics	• The Agent Observability Mandate • Tracing the Agent Engine Workflow • Establishing the Immutable Audit Trail
Objectives	• Explain Non-Deterministic behavior. • Deconstruct runs into Cloud Trace Spans. • Justify Immutable Audit Trail for trust.
Activities	• 4 demos

Module 02

Proactive Monitoring and Evaluation

Topics	• Implementing Real-Time Metrics • Designing Actionable Alerting Policies • Evaluation for Continuous Improvement
Objectives	• Create custom dashboards for Cost & Performance. • Design Actionable Alerts to prevent budget overruns. • Establish a continuous quality loop with Golden Test Cases.
Activities	• 4 demos

Module 03

Tools for Observability on Google Cloud

Topics	• Observability for Audit and Security • Scaling Agent Development and Deployment • Scaling the Observable Enterprise
Objectives	• Implement Governance Controls for PII compliance. • Evaluate deployment trade-offs for Scaling. • Align technical metrics with Business KPIs.
Activities	• 2 demos

Module 04

Agent Observability on Google Cloud: Quiz/Reflection

Topics	• Review of Core Concepts
Objectives	• Evaluate understanding of core course concepts through scenario-based questions.
Activities	• 5 scenario-based multiple choice questions