Training: Google Cloud
Logging, Monitoring and Observability in Google Cloud

Google Cloud

TRAINING GOALS:

This course teaches participants techniques for monitoring and improving infrastructure and application performance in Google Cloud. Using a combination of presentations, demos, hands-on labs, and real-world case studies, attendees gain experience with full-stack monitoring, real-time log management and analysis, debugging code in production, tracing application performance bottlenecks, and profiling CPU and memory usage.

Course objectives

- Explain the purpose and capabilities of Google Cloud's operations suite.
- Implement monitoring for multiple cloud projects.
- Create alerting policies, uptime checks and alerts.
- Install and manage Ops Agent to collect logs for Compute Engine.
- Explain Cloud Operations for GKE.
- Analyze VPC Flow Logs and firewall rules logs.
- Analyze and export Cloud Audit Logs instances.
- Profile and identify resource-intensive functions in an application.
- Analyze resource utilization cost for monitoring related components within Google Cloud.

Audience

- Cloud architects, administrators, and SysOps personnel
- Cloud developers and DevOps personnel

CONSPECT:

- Module 1 Introduction to Google Cloud Operations Suite
  - Objectives
    - Describe the purpose and capabilities of Google Cloud's operations suite
    - Explain the purpose of the Cloud Monitoring tool.

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- Explain the purpose of Cloud Logging and Error Reporting tools.
- Explain the purpose of Application Performance Management tools.

- Activities
  - 1 quiz

- Module 2 Monitoring Critical Systems
  - Objectives
    - Use Cloud Monitoring to view metrics for multiple cloud projects.
    - Explain the different types of dashboards and charts that can be built.
    - Create an uptime check.
    - Explain the cloud operations architecture.
    - Explain and demonstrate the purpose of using Monitoring Query Language (MQL) for monitoring.
  - Activities
    - 1 quiz
    - 1 lab
- Module 3 Alerting Policies
  - Objectives
    - Explain alerting strategies.
    - Explain alerting policies.
    - Explain error budget.
    - Explain why server-level indicators (SLIs), service-level objectives (SLOs), and service-level agreements (SLAs) are important.
    - Identify types of alerts and common uses for each.
    - Use Cloud Monitoring to manage services.
  - Activities
    - 1 quiz
    - 1 labs
- Module 4 Advanced Logging and Analysis
  - Objectives
    - Use Log Explorer features.
    - Explain the features and benefits of logs-based metrics.
    - Define log sinks (inclusion filters) and exclusion filters.
    - Explain how BigQuery can be used to analyze logs.
    - Export logs to BigQuery for analysis.
    - Use log analytics on Google Cloud.
  - Activities
    - 1 quiz

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- 1 lab

- Module 5 Working with Audit Logs
  - Objectives
    - Explain Cloud Audit Logs.
    - List and explain different audit logs.
    - Explain the features and functionalities of the different audit logs.
    - List the best practices to implement audit logs.
  - Activities
    - 1 quiz
    - 1 lab
- Module 6 Configuring Google Cloud Services for Observability
  - Objectives
    - Use the Ops Agent with Compute Engine.
    - Enable and use Kubernetes Monitoring.
    - Explain the benefits of using Google Cloud Managed Service for Prometheus.
    - Explain the usage of PromQL to query Cloud Monitoring metrics.
    - Explain the uses of Open Telemetry.
    - Explain custom metrics.
  - Activities
    - 1 quiz
    - 1 lab
- Module 7 Monitoring Google Cloud Network and Data Access
  - Objectives
    - Collect and analyze VPC Flow Logs and firewall rules logs.
    - Enable and monitor Packet Mirroring.
    - Explain the capabilities of the Network Intelligence Center.
  - Activities
    - 1 quiz
    - 1 lab
- Module 8 Investigating Application Performance Issues
  - Objectives
    - Explain the features and benefits of Error Reporting, Cloud Trace, and Cloud Profiler.
    - Explain the functionalities of the Error Reporting, Cloud Trace, and Cloud Profiler.
  - Activities
    - 1 quiz

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- 1 lab

- Module 9 Optimizing the Costs for Operations Suite
  - Objectives
    - Analyze resource utilization cost for monitoring related components within Google Cloud.
    - Implement best practices for controlling the cost of monitoring within Google Cloud.
  - Activities
    - 1 quiz

REQUIREMENTS:

To get the most out of this course, participants should:

- Have completed the Google Cloud Fundamentals: Core Infrastructure course or have equivalent experience.
- Have basic scripting or coding familiarity.
- Be proficient with command-line tools and Linux operating system environments.

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by Google Cloud.

TRAINER:

Authorized Google Cloud Trainer.

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