
## Course description

Master DevOps practices on Google Cloud and validate your ability to build reliable, scalable, secure, and automated cloud solutions. This comprehensive instructor-led certification course equips professionals with the skills to implement CI/CD pipelines, infrastructure automation, monitoring, incident management, and Site Reliability Engineering (SRE) practices using Google Cloud services.

- Course level: Professional
- Duration: 4 days

## Activities

This course includes instructor-led sessions, hands-on demonstrations, and interactive discussions to reinforce learning.

## Course objectives

In this course, you will learn to:

- Apply DevOps principles to automate software delivery on Google Cloud.
- Design and implement CI/CD pipelines using Google Cloud developer tools.
- Manage infrastructure using Infrastructure as Code (Terraform).

• Build and deploy containerized applications using Google Kubernetes Engine (GKE) and Cloud Run. • Implement continuous monitoring, logging, and observability using Cloud Operations Suite.

• Configure alerting, dashboards, and incident response strategies.

• Apply Site Reliability Engineering (SRE) principles, including SLIs, SLOs, and error budgets.

• Improve deployment reliability using blue-green, canary, and rolling deployment strategies.

• Implement secure DevSecOps practices throughout the software delivery lifecycle.

• Optimize cloud performance, scalability, and operational costs.

• Troubleshoot production workloads and automate operational tasks.

• Prepare confidently for the Google Cloud Professional Cloud DevOps Engineer certification exam.

## Key features

• DevOps Fundamentals

• Continuous Integration & Deployment

• Infrastructure Automation

• Kubernetes & Containers

• Site Reliability Engineering (SRE)

• Monitoring & Observability

• Security & DevSecOps

• Incident Management

• Certification Preparation

## Intended audience

This course is intended for:

• DevOps Engineers

• Site Reliability Engineers (SREs)

• Cloud Engineers

• Cloud Administrators

• Cloud Architects

- Infrastructure Engineers
- Platform Engineers
- Automation Engineers
- Software Engineers
- Release Engineers
- Build and Deployment Engineers
- System Administrators
- IT Operations Engineers
- Professionals preparing for the Google Cloud Professional Cloud DevOps Engineer certification

## Prerequisites

We recommend that attendees of this course have:

- Prior knowledge gained through the following courses will be beneficial:
- Google Cloud Fundamentals: Core Infrastructure
- Getting started with Google Kubernetes Engine
- Getting started with Terraform

## Course outline

**Logging, Monitoring, and Observability in Google Cloud - Module: Introduction to Google Cloud Observability**

- Introduction to Google Cloud Observability
- Observability Principles and Concepts
- Monitoring, Logging, and Tracing Overview
- Google Cloud Operations Suite Overview
- Key Components of Cloud Observability
- Benefits of Observability in Cloud Environments• Use Cases for Monitoring and Troubleshooting
- Overview of Observability Services in Google Cloud

**Logging, Monitoring, and Observability in Google Cloud - Module: Monitoring Critical Resources**

- Monitoring Compute, Storage, and Network Resources
- Introduction to Cloud Monitoring
- Metrics and Resource Monitoring Concepts
- Creating Alerting Policies
- Uptime Checks
- Building Dashboards
- Threshold-Based Alerts
- Incident Notifications and Alerting Best Practices
- Monitoring Use Cases and Troubleshooting

**Logging, Monitoring, and Observability in Google Cloud - Module: Managing Logs**

- Introduction to Cloud Logging
- Log Entries and Log Structure
- Working with Log Explorer
- Log Buckets Overview
- Log Routing Concepts
- Log Exclusions
- Retention Policies
- Logging Best Practices
- Centralized Logging Architecture

**Logging, Monitoring, and Observability in Google Cloud - Module: Advanced Logging and Analysis**

- Exporting Logs to BigQuery
- Log Analytics Concepts
- Querying Logs in BigQuery
- Creating Log-Based Metrics
- Monitoring Custom Metrics
- Building Insights from Logs
- Correlating Logs with Monitoring
- Advanced Troubleshooting Techniques

**Logging, Monitoring, and Observability in Google Cloud - Module: Cloud Audit Logs**

- Introduction to Cloud Audit Logs
- Types of Audit Logs
- Admin Activity Logs
- Data Access Logs
- System Event Logs
- Policy Denied Logs
- Audit Logging Use Cases
- Enabling and Managing Audit Logs
- Security and Compliance Monitoring

**Logging, Monitoring, and Observability in Google Cloud - Module: Configuring Services for Observability**

- Installing and Configuring Ops Agent
- Monitoring Virtual Machines
- GKE Monitoring Overview
- Prometheus and PromQL Basics
- OpenTelemetry Concepts
- Collecting Metrics and Logs from Applications
- Instrumenting Services for Observability
- Best Practices for Service Monitoring

**Logging, Monitoring, and Observability in Google Cloud - Module: Monitoring the Google Cloud Network**

- Network Monitoring in Google Cloud
- VPC Flow Logs Overview
- Collecting and Analyzing Network Traffic Logs
- Network Performance Monitoring
- Introduction to Network Intelligence Center
- Connectivity Tests
- Network Topology Visualization
- Network Troubleshooting Use Cases

**Logging, Monitoring, and Observability in Google Cloud - Module: Investigating Application Performance Issues**

- Introduction to Application Performance Monitoring (APM)
- Cloud Trace Overview
- Distributed Tracing Concepts
- Cloud Profiler Overview
- CPU and Memory Profiling
- Error Reporting in Google Cloud
- Root Cause Analysis
- Performance Bottleneck Investigation
- Best Practices for Application Troubleshooting

**Logging, Monitoring, and Observability in Google Cloud - Module: Optimizing Costs**

- Cost Monitoring in Google Cloud
- Billing and Cost Analysis Tools
- Resource Usage Optimization
- Identifying Cost Drivers
- Monitoring Idle Resources
- Cost Control Best Practices
- Budget Alerts and Recommendations
- Operational Cost Optimization Strategies

**Architecting with Google Cloud Design and Process - Module: Introduction to the Course**

- Core overview of cloud-native architecture patterns
- Evolution of legacy infrastructure into elastic cloud environments
- Introduction to the case studies and architecture review frameworks

**Architecting with Google Cloud Design and Process - Module: Defining Requirements**

- Differentiating between business metrics and technical system targets
- Engineering Key Performance Indicators (KPIs) for cloud software
- Designing Service Level Indicators (SLIs) and quantifiable Service Level Objectives (SLOs)

- Calculating and managing Error Budgets across system release cycles

**Architecting with Google Cloud Design and Process - Module: Microservice Design and Architecture**

- Domain-Driven Design (DDD) principles: Finding subdomains and context boundaries
- Monolithic breakdown strategies and microservice isolation patterns
- Decoupling application communications: Synchronous REST/gRPC vs. Asynchronous Pub/Sub
- Deployment service mapping: Google Kubernetes Engine (GKE), Cloud Run, and Compute Engine

**Architecting with Google Cloud Design and Process - Module: DevOps Automation**

- Principles of Continuous Integration and Continuous Deployment (CI/CD) for microservices
- Infrastructure as Code (IaC) architectures leveraging Terraform templates
- Managing multi-environment release branches (Development, Staging, Production)
- Automating code delivery using Cloud Build, Artifact Registry, and Cloud Deploy

**Architecting with Google Cloud Design and Process - Module: Choosing Storage Solutions**

- Storage tier classifications: Object, Block, Relational, and Non-Relational (NoSQL)
- Evaluating trade-offs between Cloud Storage, Cloud SQL, Cloud Spanner, and Firestore
- Understanding database parameters: ACID compliance vs. BASE models and global scaling
- Caching strategies using Memorystore to accelerate application read request paths

**Architecting with Google Cloud Design and Process - Module: Google Cloud Network Architecture**

- Enterprise-grade Virtual Private Cloud (VPC) design and global routing structures

- Connecting disparate networks: VPC Network Peering, Shared VPC, and Hybrid Networking
- Hybrid cloud patterns: High Availability Cloud VPN vs. Dedicated Cloud Interconnect
- Traffic optimization using Cloud DNS routing policies and global Content Delivery Networks (CDN)

**Architecting with Google Cloud Design and Process - Module: Designing Reliable Systems**

- Structural engineering patterns for High Availability (HA) and Disaster Recovery (DR)
- Configuring Managed Instance Groups (MIGs), health checks, and cross-region load balancers
- Autoscaling triggers, scaling policies, and stateful vs. stateless server patterns
- Mitigating failures using circuit breakers, retries with exponential backoff, and graceful degradation

**Architecting with Google Cloud Design and Process - Module: Security**

- Implementing Zero-Trust security postures using Identity-Aware Proxy (IAP)
- IAM best practices: Fine-grained permissions, custom roles, and service account keys
- Perimeter security management: Cloud Armor policies for Layer 7 WAF and DDoS mitigation
- Compliance tracking, enterprise resource organization governance, and Cloud KMS encryption keys

**Architecting with Google Cloud Design and Process - Module: Maintenance and Monitoring**

- Release management paradigms: Blue-Green deployments, Canary rollouts, and automatic rollbacks
- Continuous cost monitoring, cloud usage forecasting, and pricing optimizations
- Deep-dive full-stack monitoring: Cloud Logging, Cloud Monitoring, Trace, Profiler, and Error Reporting

• Configuring synthetic uptime checks, tracking system health trends, and threshold alerting rules

## Certification details

• CloudThat Course Completion Certificate

## FAQs

**Who is this course for?**

This course is designed for DevOps engineers, Site Reliability Engineers (SREs), cloud engineers, platform engineers, software developers, cloud administrators, infrastructure engineers, and professionals preparing for the Google Cloud Professional Cloud DevOps Engineer certification.

**What are the prerequisites?**

Participants should have a basic understanding of cloud computing, Linux administration, networking, software development, and CI/CD concepts. Prior experience with Google Cloud is beneficial but not mandatory.

**Is prior Google Cloud experience required?**

No. However, familiarity with Google Cloud services or another cloud platform (AWS or Azure) will help participants understand the concepts more effectively.

**Does this course prepare me for the Professional Cloud DevOps Engineer certification**

exam? Yes. The curriculum is aligned with Google's Professional Cloud DevOps Engineer certification objectives and includes hands-on labs, production scenarios, and certificationfocused discussions.

**Will there be hands-on labs?**

Yes. The course includes practical labs covering CI/CD pipelines, Cloud Build, Artifact Registry, Terraform, Kubernetes, Cloud Monitoring, Cloud Logging, Cloud Deploy, and deployment automation.

**What practical skills will I gain?**

You will learn to automate deployments, build CI/CD pipelines, implement Infrastructure as Code, manage Kubernetes workloads, monitor production systems, improve application reliability, and apply DevSecOps and SRE best practices.

**Which Google Cloud services are covered?**

The course covers Compute Engine, Google Kubernetes Engine (GKE), Cloud Run, Cloud Build, Cloud Deploy, Artifact Registry, Cloud Monitoring, Cloud Logging, Cloud Trace, Cloud Profiler, Cloud Storage, Secret Manager, IAM, Cloud Operations Suite, Pub/Sub, Cloud Source Repositories, and Terraform.

**Is this course suitable for beginners?**

This is a professional-level course. Learners should have foundational cloud knowledge and basic software development or system administration experience.

**Will I receive a certificate after completing the course?**

Yes. Participants will receive a Course Completion Certificate after successfully completing the training.

**What is the delivery format?**

The course is available as: • Instructor-Led Classroom Training (ILT) • Virtual Instructor-Led Training (VILT) • Corporate On-site Training • Customized Enterprise Training Programs

**How will this course help my career?**

This course prepares you for one of Google's most respected professional certifications, helping you qualify for roles such as DevOps Engineer, Site Reliability Engineer (SRE), Cloud Engineer, Platform Engineer, Cloud Consultant, and Infrastructure Automation Engineer.

**What DevOps concepts are covered?**

The course covers Continuous Integration (CI), Continuous Delivery (CD), Infrastructure as Code (IaC), GitOps principles, Site Reliability Engineering (SRE), observability, monitoring, incident response, deployment automation, DevSecOps, cloud operations, cost optimization, and operational excellence on Google Cloud.