

Cloud Security Engineer

Course Outline

Module 1: Preparing for Your Professional Cloud Security Engineer Journey

Topics:

- Introduction
- Configuring Access Within a Cloud Solution Environment
- Ensuring Data Protection
- Managing Operations in a Cloud Environment
- Ensuring Compliance

Module 2: Google Cloud Fundamentals: Core Infrastructure

Topics:

- Introducing Google Cloud
- Resources and Access in the Cloud
- Virtual Machines and Networks in the Cloud
- Storage in the Cloud
- Containers in the Cloud
- Applications in the Cloud
- Developing and Deploying in the Cloud
- Logging and Monitoring in the Cloud

Hands-On:

- A Tour of Google Cloud Hands-on Labs
- Compute Engine: Qwik Start - Windows
- Getting Started with Cloud Shell and gcloud
- Kubernetes Engine: Qwik Start
- Cloud Storage: Qwik Start - Cloud Console

Module 3: Networking in Google Cloud: Defining and Implementing Networks

Topics:

- Google Cloud VPC Networking Fundamentals
- Controlling Access to VPC Networks
- Sharing Networks Across Projects
- Load Balancing

Hands-On:

- Multiple VPC Networks
- VPC Network Peering
- VPC Networks - Controlling Access
- HTTP Load Balancer with Cloud Armor
- Create an Internal Load Balancer

Module 4: Managing Security in Google Cloud

Topics:

- Foundations of Google Cloud Security
- Cloud Identity
- Identity and Access Management (IAM)

- Configuring Virtual Private Cloud for Isolation and Security

Hands-On:

- Cloud IAM: Qwik Start
- IAM Custom Roles
- Service Accounts and Roles: Fundamentals
- User Authentication: Identity-Aware Proxy
- Getting Started with Cloud KMS
- Setting up a Private Kubernetes Cluster

Module 5: Logging, Monitoring, and Observability in Google Cloud

Topics:

- Introduction to Monitoring in Google Cloud
- Avoiding Customer Pain
- Alerting Policies
- Monitoring Critical Systems
- Configuring Google Cloud Services for Observability
- Advanced Logging and Analysis
- Monitoring Network Security and Audit Logs
- Managing Incidents
- Investigating Application Performance Issues
- Optimizing the Costs of Monitoring

Hands-On:

- Cloud Monitoring: Qwik Start

Module 6: Security Best Practices in Google Cloud

Topics:

- Securing Compute Engine: Techniques and Best Practices
- Securing Cloud Data: Techniques and Best Practices
- Application Security: Techniques and Best Practices
- Securing Kubernetes: Techniques and Best Practices

Hands-On:

- Migrating to GKE Containers
- How to Use a Network Policy on Google Kubernetes Engine
- Using Role-based Access Control in Kubernetes Engine
- Google Kubernetes Engine Security: Binary Authorization
- Securing Applications on Kubernetes Engine - Three Examples
- Hardening Default GKE Cluster Configurations

Module 7: Mitigating Security Vulnerabilities on Google Cloud Platform

Topics:

- Securing Compute Engine
- Securing Cloud Data
- Protecting Against Distributed Denial of Service (DDoS) Attacks
- Application Security
- Content-Related Vulnerabilities

Hands-On:

- Configuring, Using, and Auditing VM Service Accounts and Scopes

- Using Customer-Managed Encryption Keys with Cloud Storage and Cloud KMS
- Configuring Traffic Blocklisting with Google Cloud Armor
- Using Web Security Scanner to Find Vulnerabilities in an App Engine Application

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