[sfeir] Institute

Google Cloud, Google Cloud | GCP100A

Google Cloud Fundamentals: Core Infrastructure

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What you'll learn

- Identify the purpose and value of Google Cloud products and services.
- Define how infrastructure is organized and controlled in Google Cloud.
- Explain how to create basic infrastructure in Google Cloud.
- Select and use Google Cloud storage options.
- Describe the purpose and value of Google Kubernetes Engine.
- Identify the use cases for serverless Google Cloud services.
- Explore Google Clouds Generative AI tools and best practices.

Target audience

- Individuals planning to deploy applications and create application environments on Google Cloud
- Developers, systems operations professionals, and solution architects getting started with Google Cloud
- Executives and business decision makers evaluating the potential of Google Cloud to address their business needs

Prerequisites

- Familiarity with application development, systems operations, Linux operating systems, and data analytics or machine learning is helpful in understanding the technologies covered.

Course Outline

Module 01: Introducing Google Cloud

Topics

- Cloud computing overview
- IaaS and PaaS
- The Google Cloud network
- Environmental impact
- Security
- Open-source ecosystems
- Pricing and billing

Objectives:

- Identify the benefits of Google Cloud.
- Define the components of the Google network infrastructure, including points of presence, data centers, regions, and zones.
- Identify the difference between infrastructure as a service (IaaS) and platform as a service (PaaS).

Activities:

- Quiz

Module 02: Resources and Access in the Cloud

Topics

- Google Cloud resource hierarchy
- IAM
- IAM roles
- Service accounts
- Cloud Identity
- Interacting with Google Cloud

Objectives

- Identify the purpose of projects on Google Cloud.
- Define the purpose of and use cases for IAM.
- List interaction methods with Google Cloud.
- Use Cloud Marketplace to interact with Google Cloud.

Activities:

- Lab: Getting Started with Cloud Marketplace
- Quiz: Module quiz

Module 03: Virtual Machines and Networks in the Cloud

Topics

- Virtual Private Cloud networking
- Compute Engine
- Scaling virtual machines
- Important VPC compatibilities
- Cloud Load Balancing
- Cloud DNS and Cloud CDN
- Connecting networks to Google VPC

Objectives

- Explore the basics of networking in Google Cloud.
- Identify the purpose of and use cases for Google Compute Engine.
- Outline how Compute Engine can scale.
- Detail important VPC compatibilities including routing tables, firewalls, and VPC peering.
- Explore how Cloud Load Balancing functions in Google Cloud.
- Deploy a basic infrastructure to Google Cloud

Activities:

- Lab: Getting Started with VPC Networking and Google Compute Engine
- Quiz: Module quiz

Module 04: Storage in the Cloud

- Cloud Storage
- Cloud SQL
- Cloud Spanner

- Firestore
- Cloud Bigtable
- Comparing storage options

Objectives

- Identify the purpose of and use cases for Cloud Storage.
- Distinguish between Cloud Storage classes.
- Distinguish between Google Cloud's database storage options.
- Deploy an application that uses Cloud SQL and Cloud Storage.

Activities:

- Lab: Getting Started with Cloud Storage and Cloud SQL
- Quiz: Module quiz

Module 05: Containers in the Cloud

Topics

- Introduction to containers
- Kubernetes
- Google Kubernetes Engine

Objectives

- Define the concept of a container and identify uses for containers.
- Identify the purpose of and use cases for Kubernetes and Google Kubernetes Engine.

Activities:

- Quiz: Module quiz

Module 06: Applications in the Cloud

Topics

- Cloud Run
- Cloud Functions

Objectives

- Identify the purpose and use cases for Cloud Run

- Describe how Cloud Functions can support application development on Google Cloud.
- Deploy a containerized application on Cloud Run

Activities

- Lab: Hello Cloud Run
- Quiz: Module quiz

Module 07: Prompt Engineering

Topics

- Introduction to generative AI
- Introduction to large language models
- Prompt engineering and recommended practices

Objectives

- Define what generative AI is.
- Explain how large language models are trained.
- Detail the elements and types of a prompt.
- Explore recommended practices when constructing prompts.

Activities

- Quiz: Module quiz