# Google Cloud Fundamentals: Core Infrastructure Training

Duration: **1 Day**

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## Overview

This **one-day instructor-led course** provides technical learners with an introduction to the core products, services, and infrastructure concepts of Google Cloud.

The programme combines presentations, live demonstrations, and hands-on labs to help participants understand the value of Google Cloud and how cloud-based solutions can be incorporated into technical and business strategies.

The course focuses primarily on compute, storage, and networking, while also introducing application deployment, containers, monitoring, Big Data, and Machine Learning services.

Participants compare different approaches for running applications in Google Cloud, explore the main storage and database options, and gain an introduction to managed analytics through services such as BigQuery.

## Prerequisites

Familiarity with the following areas can help participants understand the technologies covered:

- Application Development
- Systems Operations
- Linux operating systems
- Data Analytics
- Machine Learning

Advanced experience is not required.

## Who Should Attend

This course is particularly suitable for:

- Technical professionals who are new to Google Cloud,
- Learners with little or no previous public cloud experience,
- Developers and systems professionals building cloud infrastructure knowledge,
- Anyone seeking a technical foundation in the main Google Cloud services.

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## What You Will Learn

By the end of this course, participants will be able to:

- Explain the purpose and value of key Google Cloud products and services,
- Interact with basic Google Cloud services,
- Describe common ways organisations use Google Cloud,
- Compare application deployment environments,
- Evaluate Compute Engine, App Engine, and container-based deployment options,
- Compare the main storage and database services available in Google Cloud,
- Explain the use cases for Cloud Storage, Cloud SQL, Cloud Spanner, Cloud Datastore, and Bigtable,
- Describe basic analytics use cases with BigQuery,
- Identify the main components of Google Cloud networking.

## Outline

### 1. Introducing Google Cloud

- Evolution of Cloud Computing
- The Google Cloud approach
- Main Google Cloud service categories
- Compute
- Storage
- Big Data
- Machine Learning
- Regions and Zones
- Global infrastructure concepts
- Typical uses of Google Cloud services

### 2. Getting Started with Google Cloud

- Google Cloud Projects
- Organising resources through projects
- Identity and Access Management (IAM)
- Controlling access to users and services
- Methods for connecting to Google Cloud
- Console and management options
- Overview of ready-to-deploy solutions and deployment tools

### 3. Virtual Machines in the Cloud

- Introduction to Compute Engine
- Creating and using Virtual Machines
- Compute resources on Google’s global infrastructure
- Machine types and core configuration options
- Virtual networking
- Introduction to Google VPC
- Connecting VM instances
- Common Compute Engine use cases

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### 4. Storage in the Cloud

- Understanding application storage requirements
- Selecting storage based on workload
- Cloud Storage
- Cloud SQL
- Cloud Spanner
- Cloud Datastore
- Google Bigtable
- Comparing object, relational, and NoSQL approaches
- Choosing an appropriate storage service

### 5. Containers in the Cloud

- Introduction to containers
- Benefits of containerisation
- Portability and scalability
- Introduction to Kubernetes
- Container orchestration
- Google Kubernetes Engine (GKE)
- Creating clusters
- Running containers in a cluster
- Managing containers with Kubernetes Engine
- Container-based application deployment

### 6. Applications in the Cloud

- Platform as a Service concepts
- Introduction to App Engine
- How App Engine supports application deployment
- Platform-managed infrastructure
- Built-in services for web applications
- App Engine use cases
- Comparing App Engine with Compute Engine

### 7. Developing, Deploying and Monitoring in the Cloud

- Development tools for Google Cloud
- Deployment options
- Integrated cloud tooling
- Monitoring concepts
- Application visibility in cloud environments
- Common tools that work with Google Cloud
- Supporting development and operations together

### 8. Big Data and Machine Learning in the Cloud

- Overview of Big Data services
- Data analytics on Google Cloud
- BigQuery
- Managed data warehouse concepts
- Basic BigQuery use cases

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- Introduction to Machine Learning services
- Overview of Google Cloud AI/ML capabilities
- Integrating data and ML services into applications

### 9. Summary and Review

- Reviewing the services introduced during the course
- Comparing Google Cloud Compute services
- Comparing Storage and Database services
- Reviewing key Google VPC networking capabilities
- Selecting services based on workload requirements
- Identifying next learning steps

### Hands-On Learning

The course combines theory with practical activities including:

- Instructor demonstrations,
- Google Cloud Console exercises,
- Hands-on labs,
- Scenario-based activities.

Participants work directly with core Google Cloud resources to reinforce their understanding of compute, storage, networking, and deployment services.