

# Architecting with Google Kubernetes Engine (AGKE)

ID GO-AGKE Duración 3 días

## Quién debería asistir

This class is intended for the following participants:

Cloud architects, administrators, and SysOps/DevOps personnel

Individuals using Google Cloud Platform to create new solutions or to integrate existing systems, application environments, and infrastructure with the Google Cloud Platform.

## Prerrequisitos

To get the most out of this course, participants should have completed [Google Cloud Fundamentals: Core Infrastructure \(GCF-CI\)](#) or have equivalent experience

Basic proficiency with command-line tools and Linux operating system environments

## Objetivos del curso

This course teaches participants the following skills:

- Understand how software containers work
- Understand the architecture of Kubernetes
- Understand the architecture of Google Cloud Platform
- Understand how pod networking works in Kubernetes Engine
- Create and manage Kubernetes Engine clusters using the GCP Console and gcloud/ kubectl commands
- Launch, roll back and expose jobs in Kubernetes
- Manage access control using Kubernetes RBAC and Google Cloud IAM
- Managing pod security policies and network policies
- Using Secrets and ConfigMaps to isolate security credentials and configuration artifacts
- Understand GCP choices for managed storage services
- Monitor applications running in Kubernetes Engine

## Contenido del curso

This three-day instructor-led class introduces participants to deploying and managing containerized applications on Google Kubernetes Engine (GKE) and the other services provided by Google Cloud Platform. Through a combination of presentations, demos, and hands-on labs, participants explore and deploy solution elements, including infrastructure components such as pods, containers, deployments, and services; as well as networks and application services. This course also covers deploying practical solutions including security and access management, resource management, and resource monitoring.

## Esquema Detallado del Curso

### Module 1: Introduction to Google Cloud Platform

- Use the Google Cloud Platform Console
- Use Cloud Shell
- Define cloud computing
- Identify GCPs compute services
- Understand regions and zones
- Understand the cloud resource hierarchy
- Administer your GCP resources

### Module 2, Containers and Kubernetes in GCP

- Create a container using Cloud Build
- Store a container in Container Registry
- Understand the relationship between Kubernetes and Google Kubernetes Engine (GKE)
- Understand how to choose among GCP compute platforms

### Module 3: Kubernetes Architecture

- Understand the architecture of Kubernetes: pods, namespaces
- Understand the control-plane components of Kubernetes
- Create container images using Google Cloud Build
- Store container images in Google Container Registry
- Create a Kubernetes Engine cluster

### Module 4: Kubernetes Operations

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- Work with the kubectl command
- Inspect the cluster and Pods
- View a Pods console output
- Sign in to a Pod interactively

## Module 5: Deployments, Jobs, and Scaling

- Create and use Deployments
- Create and run Jobs and CronJobs
- Scale clusters manually and automatically
- Configure Node and Pod affinity
- Get software into your cluster with Helm charts and Kubernetes Marketplace

## Module 6: GKE Networking

- Create Services to expose applications that are running within Pods
- Use load balancers to expose Services to external clients
- Create Ingress resources for HTTP(S) load balancing
- Leverage container-native load balancing to improve Pod load balancing
- Define Kubernetes network policies to allow and block traffic to pods

## Module 7: Persistent Data and Storage

- Use Secrets to isolate security credentials
- Use ConfigMaps to isolate configuration artifacts
- Push out and roll back updates to Secrets and ConfigMaps
- Configure Persistent Storage Volumes for Kubernetes Pods
- Use StatefulSets to ensure that claims on persistent storage volumes persist across restarts

## Module 8: Access Control and Security in Kubernetes and Kubernetes Engine

- Understand Kubernetes authentication and authorization
- Define Kubernetes RBAC roles and role bindings for accessing resources in namespaces
- Define Kubernetes RBAC cluster roles and cluster role bindings for accessing cluster-scoped resources
- Define Kubernetes pod security policies
- Understand the structure of GCP IAM
- Define IAM roles and policies for Kubernetes Engine cluster administration

## Module 9: Logging and Monitoring

- Use Stackdriver to monitor and manage availability and

performance

- Locate and inspect Kubernetes logs
- Create probes for wellness checks on live applications

## Module 10: Using GCP Managed Storage Services from Kubernetes Applications

- Understand pros and cons for using a managed storage service versus self-managed containerized storage
- Enable applications running in GKE to access GCP storage services
- Understand use cases for Cloud Storage, Cloud SQL, Cloud Spanner, Cloud Bigtable, Cloud Firestore, and Bigquery from within a Kubernetes application

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