Training: Google Cloud
Architecting with Google Kubernetes Engine

Google Cloud

TRANING TERMS

2025-05-15 | 2 days | Virtual Classroom
2025-05-19 | 2 days | Virtual Classroom
2025-06-12 | 2 days | Virtual Classroom

TRAINING GOALS:

Learn how to deploy and manage containerized applications on Google Kubernetes Engine (GKE). Learn how to use other tools on Google Cloud that interact with GKE deployments. This course features a combination of lectures, demos, and hands-on labs to help you explore and deploy solution elements—including infrastructure components like pods, containers, deployments, and services—along with networks and application services. You'll also learn how to deploy practical solutions, including security and access management, resource management, and resource monitoring.

What you'll learn

- Create and manage workloads in Google Kubernetes Engine.
- Explain how pod networking works in Google Kubernetes Engine.
- Define and work with different Kubernetes storage abstractions.
- Describe and manage authentication, authorization, and security in Google Kubernetes Engine.
- Monitor applications running in Google Kubernetes Engine.
- Explore Google Cloud managed storage services options.
- Configure CI/CD pipelines for Google Kubernetes Engine.

Audience

- Cloud architects, administrators, and SysOps/DevOps personnel.
- Individuals using Google Cloud to create new solutions or to integrate existing systems, application environments, and infrastructure with Google Cloud.

Compendium Education Center Ltd.
ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Bielska 17, 02-394 Warszawa, tel.: (22) 417 41 70

BNP Paribas Bank Polska S.A.
EUR: PL 79 1600 1462 1853 6451 3000 0006
USD: PL 52 1600 1462 1853 6451 3000 0007

CONSPECT:

- Module 1 - Workloads: Deployments and Jobs
  - Topics
    - Creating deployments.
    - Inspecting deployments.
    - Updating deployments.
    - Adopting other deployment strategies.
    - Using Jobs and Cronjobs
    - Cluster scaling.
    - Controlling Pod placement with labels and affinity rules.
    - Controlling Pod placement with taints and tolerations.
    - Getting software into your cluster.
  - Objectives
    - Define, configure, inspect, manage, and update Deployments.
    - Define what Jobs and CronJobs are in GKE, and explore relevant use cases. Create and run Jobs.
    - Explain how to scale clusters manually and automatically.
    - Configure node and pod affinity.
  - Activities
    - Quiz
    - (Lab) Creating Google Kubernetes Engine Deployments
- Module 2 - Google Kubernetes Engine Networking
  - Topics
    - Pod networking
    - Kubernetes Services
    - Service type and load balancers
    - Ingress
    - Container-native load balancing
    - Network policies
  - Objectives
    - Explore Kubernetes networking, including Pod and cluster networking.
    - Create services to expose to applications running within Pods.
    - Configure load balancers to expose services to external clients. Explore container-native load balancing in GKE.
    - Configure Google Kubernetes Engine networking.

Compendium Education Center Ltd.
ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Bielska 17, 02-394 Warszawa, tel.: (22) 417 41 70
BNP Paribas Bank Polska S.A.
EUR: PL 79 1600 1462 1853 6451 3000 0006
USD: PL 52 1600 1462 1853 6451 3000 0007

- Activities
  - Quiz
  - (Lab) Configuring Google Kubernetes Engine (GKE) Networking
- Module 3 - Persistent Data and Storage
  - Topics
    - Volumes
    - Ephemeral volumes
    - Durable volumes
    - Statefulsets
    - Configmaps
    - Secrets
  - Objectives
    - Define and work with Kubernetes storage abstractions.
    - Run and maintain sets of pods using StatefulSets.
    - Use ConfigMaps to decouple configuration from Pods.
    - Manage and store sensitive access and authentication data.
    - Configure persistent storage for Google Kubernetes Engine.
  - Activities
    - Quiz
    - (Lab) Configuring Persistent Storage for Google Kubernetes Engine
- Module 4 - Access Control and Security in Kubernetes and Google Kubernetes Engine
  - Topics
    - Explore Kubernetes authentication and authorization.
    - Define Kubernetes RBAC and how it works with IAM to secure GKE clusters.
    - Configure Workload Identity to access Google Cloud services from within GKE.
    - Secure GKE with Pod Security Standards and Pod Security Admission.
    - Implement Role-Based Access Control with GKE.
  - Objectives
    - Authentication and authorization
    - Kubernetes role-based access control
    - Workload Identity
    - Kubernetes control plane security
    - Pod security
  - Activities
    - Quiz
    - (Lab) Securing Google Kubernetes Engine with Cloud IAM and Pod Security Admission

Compendium Education Center Ltd.
ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Bielska 17, 02-394 Warszawa, tel.: (22) 417 41 70
BNP Paribas Bank Polska S.A.
EUR: PL 79 1600 1462 1853 6451 3000 0006
USD: PL 52 1600 1462 1853 6451 3000 0007

- Module 5 - Google Kubernetes Engine Logging and Monitoring
  - Topics
    - Cloud Observability
    - Cloud Logging
    - Cloud Monitoring
    - Inspecting logs with the kubectl command
    - Inspecting logs with Cloud Logging and logging agents
  - Objectives
    - Identify the tools included in the Google Cloud Observability .
    - Configure the Google Cloud operations suite to monitor and manage the availability and performance.
    - Inspect logs using the kubectl command.
    - Inspect Kubernetes logs using Google Cloud Observability.
    - Configure GKE-native Monitoring and Logging.
  - Activities
    - Quiz
    - Lab: Configuring GKE-Native Monitoring and Logging
- Module 6 - Using Google Cloud Managed Storage Services with Google Kubernetes Engine
  - Topics
    - Using Google Cloud services.
    - Using Cloud Storage.
    - Using Google Cloud databases
    - Using Cloud SQL and SQL Auth Proxy.
    - Comparing storage options.
  - Objectives
    - Contrast managed storage services with self-managed storage.
    - Identify use cases for Cloud Storage for Kubernetes applications.
    - Compare the range of Google Cloud managed database services.
    - Explore Cloud SQL Auth Proxy and how it connects to Cloud SQL from within GKE.
    - Use Cloud SQL with Google Kubernetes Engine.
  - Activities
    - Quiz
    - (Lab) Using Cloud SQL with Google Kubernetes Engine and Workload Identity
- Module 7 - Using CI/CD with Google Kubernetes Engine
  - Topics
    - What is CI/CD?
    - CI/CD pipeline construction

Compendium Education Center Ltd.
ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Bielska 17, 02-394 Warszawa, tel.: (22) 417 41 70
BNP Paribas Bank Polska S.A.
EUR: PL 79 1600 1462 1853 6451 3000 0006
USD: PL 52 1600 1462 1853 6451 3000 0007

- CI/CD tools available in Google Cloud
- Best practices for using CI/CD on Google Cloud

- Objectives
  - Define continuous integration and continuous delivery and identify why it is important.
  - Examine CI/CD pipelines and how they can optimize app releases.
  - Explore first-party and third-party CI/CD tools supported by Google Cloud.
  - Explore Google's best practices for a GKE CI/CD pipeline.
- Activities
  - Quiz

- Module 8 - Course Summary
  - Topics:
    - Course Summary
  - Objectives
    - Review the main objectives from each section of the course.

REQUIREMENTS:

Completed Getting Started with Google Kubernetes Engine or have equivalent Experience

Difficulty level

CERTIFICATE:

The participants will obtain certificates signed by Google Cloud Platform.

This course additionally prepares you for **Professional Cloud Developer** certification exam available at Kryterion test centers.

TRAINER:

Authorized Google Cloud Platform Trainer.

Compendium Education Center Ltd.
ul. Tatarska 5, 30-103 Kraków, tel.: (12) 298 47 77
ul. Bielska 17, 02-394 Warszawa, tel.: (22) 417 41 70
BNP Paribas Bank Polska S.A.
EUR: PL 79 1600 1462 1853 6451 3000 0006
USD: PL 52 1600 1462 1853 6451 3000 0007