Training: Google Cloud
Architecting with Google Kubernetes Engine

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<th>FORM OF TRAINING</th>
<th>MATERIALS</th>
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<tr>
<td>Traditional</td>
<td>Digital materials</td>
<td>1100 EUR</td>
<td>3 days</td>
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<tr>
<td>Traditional</td>
<td>CTAB Tablet</td>
<td>1200 EUR</td>
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LOCATIONS

Krakow - 5 Tatarska Street, II floor, hours: 9:00 am - 4:00 pm
Warsaw - 17 Bielska Street, hours: 9:00 am - 4:00 pm

TRAINING GOALS:

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.

Course objectives:

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

Audience:

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.
CONSPECT:

○ 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

○ 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

○ 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

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

○ 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

○ 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

- **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

- **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

- **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

- **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

**REQUIREMENTS:**

To get the most out of this course, participants should have:
- Completed Google Cloud Platform Fundamentals: Core Infrastructure or have equivalent experience
- Basic proficiency with command-line tools and Linux operating system environments

**Difficulty level**

[Difficulty level scale image]
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.