

## Szkolenie: Google Cloud Architecting Hybrid Cloud Infrastructure with Anthos



### Cel szkolenia:

This two-day instructor-led course prepares students to modernize, manage, and observe their applications using Kubernetes whether the application is deployed on-premises or on Google Cloud Platform (GCP). Through presentations, and hands-on labs, participants explore and deploy using Kubernetes Engine (GKE), GKE Connect, Istio service mesh and Anthos Config Management capabilities that enable operators to work with modern applications even when split among multiple clusters hosted by multiple providers, or on-premises.

### Course objectives:

- Connect and manage Anthos GKE clusters from GCP Console whether clusters are part of Anthos on Google Cloud or Anthos deployed on VMware.
- Understand how service mesh proxies are installed, configured and managed.
- Configure centralized logging, monitoring, tracing, and service visualizations wherever the Anthos GKE clusters are hosted.
- Understand and configure fine-grained traffic management.
- Use service mesh security features for service-service authentication, user authentication, and policy-based service authorization.
- Install a multi-service application spanning multiple clusters in a hybrid environment. Understand how services communicate across clusters.
- Migrate services between clusters.
- Install Anthos Config Management, use it to enforce policies, and explain how it can be used across multiple clusters.

### Audience:

This class is primarily intended for the following participants: Technical employees using GCP, including customer companies, partners and system integrators: deployment engineers, cloud architects, cloud administrators, system engineers, and SysOps/DevOps engineers. Individuals using GCP to create, integrate, or modernize solutions using secure, scalable microservices architectures in hybrid environments.

The course includes presentations and hands-on labs.

## Plan szkolenia:

- Anthos Overview
  - Describe challenges of hybrid cloud
  - Discuss modern solutions
  - Describe the Anthos Technology Stack
- Managing Hybrid Clusters using Kubernetes Engine
  - Understand Anthos GKE hybrid environments, with Admin and User clusters
  - Register and authenticate remote Anthos GKE clusters in GKE Hub
  - View and manage registered clusters, in cloud and on-premises, using GKE Hub
  - View workloads in all clusters from GKE Hub
  - Lab: Managing Hybrid Clusters using Kubernetes Engine
- Introduction to Service Mesh
  - Understand service mesh, and problems it solves
  - Understand Istio architecture and components
  - Explain Istio on GKE add on and it's lifecycle, vs OSS Istio
  - Understand request network traffic flow in a service mesh
  - Create a GKE cluster, with a service mesh
  - Configure a multi-service application with service mesh
  - Enable external access using an ingress gateway
  - Explain the multi-service example applications: Hipster Shop, and Bookinfo
  - Lab: Installing Open Source Istio on Kubernetes Engine
  - Lab: Installing the Istio on GKE Add-On with Kubernetes Engine
- Observing Services using Service Mesh Adapters
  - Understand service mesh flexible adapter model
  - Understand service mesh telemetry processing
  - Explain Stackdriver configurations for logging and monitoring
  - Compare telemetry defaults for cloud and on-premises environments
  - Configure and view custom metrics using service mesh
  - View cluster and service metrics with pre-configured dashboards
  - Trace microservice calls with timing data using service mesh adapters
  - Visualize and discover service attributes with service mesh
  - Lab: Telemetry and Observability with Istio
- Managing Traffic Routing with Service Mesh
  - Understand the service mesh abstract model for traffic management
  - Understand service mesh service discovery and load balancing

- Review and compare traffic management use cases and configurations
- Understand ingress configuration using service mesh
- Visualize traffic routing with live generated requests
- Configure a service mesh gateway to allow access to services from outside the mesh
- Apply virtual services and destination rules for version-specific routing
- Route traffic based on application-layer configuration
- Shift traffic from one service version to another, with fine-grained control, like a canary deployment
- Lab: Managing Traffic Routing with Istio and Envoy
- Managing Policies and Security with Service Mesh
  - Understand authentication and authorization in service mesh
  - Explain mTLS flow for service to service communication
  - Adopt mutual TLS authentication across the service mesh incrementally
  - Enable end-user authentication for the frontend service
  - Use service mesh access control policies to secure access to the frontend service
  - Lab: Managing Policies and Security with Service Mesh
- Managing Policies using Anthos Config Management
  - Understand the challenge of managing resources across multiple clusters
  - Understand how a Git repository is as a configuration source of truth
  - Explain the Anthos Config Management components, and object lifecycle
  - Install and configure Anthos Config Management, operators, tools, and related Git repository
  - Verify cluster configuration compliance and drift management
  - Update workload configuration using repo changes
  - Lab: Managing Policies in Kubernetes Engine using Anthos Config
- Configuring Anthos GKE for Multi-Cluster Operation
  - Understand how multiple clusters work together using DNS, root CA, and service discovery
  - Explain service mesh control-plane architectures for multi-cluster
  - Configure a multi-service application using service mesh across multiple clusters with multiple control-planes
  - Configure a multi-service application using service mesh across multiple clusters with a shared control-plane
  - Configure service naming/discovery between clusters
  - Review ServiceEntries for cross-cluster service discovery
  - Migrate workload from a remote cluster to an Anthos GKE cluster
  - Lab: Configuring GKE for Multi-Cluster Operation with Istio

- Lab: Configuring GKE for Shared Control Plane Multi-Cluster Operation

## Wymagania:

To get the most out of this course, participants should have completed the Architecting with Google Kubernetes Engine course and its prerequisites or have equivalent experience.

## Poziom trudności



## Certyfikaty:

The participants will obtain certificates signed by Google Cloud Platform.

## Prowadzący:

Authorized Google Cloud Platform Trainer.