Architecting with Google Kubernetes Engine

Category: Cloud Platforms | **Vendor:** Google Cloud

Duration: 16.00 hours (2 days) **13.0 CPD Hours** **Rating:** ⭐ 4.6 (5,878 reviews)

Course Information

Delivery Format: Instructor Led - Online

Course Overview

This course introduces participants to deploying and managing containerized applications on Google Kubernetes Engine (GKE) and other services provided by Google Cloud. 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.

About This Course

This course introduces participants to deploying and managing containerized applications on Google Kubernetes Engine (GKE) and other services provided by Google Cloud. 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.

Who Should Attend

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.

Prerequisites & Entry Requirements

General Prerequisites:

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

Participants should also have basic proficiency with command-line tools and Linux operating system environments

Learning Outcomes

Upon successful completion of this course, participants will be able to:

This course teaches participants the following skills:

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

Detailed Course Outline

Module 1 - Introduction to Google Cloud

- Use the Google Cloud Console
- Use Cloud Shell
- Define Cloud Computing
- Identify Google Cloud Compute Services
- Understand Regions and Zones
- Understand the Cloud Resource Hierarchy

- Administer your Google Cloud Resources

- 1 lab and 1 quiz

Module 2 - Containers and Kubernetes in Google Cloud

- 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 Google Cloud Compute Platforms

- 1 lab and 1 quiz

Module 3 - Kubernetes Architecture

- Understand the Architecture of Kubernetes: Pods, Namespaces

- Understand the Control-plane Components of Kubernetes

- Create Container Images using Cloud Build

- Store Container Images in Container Registry

- Create a Kubernetes Engine Cluster

- 1 lab and 1 quiz

Module 4 - Kubernetes Operations

- The Kubectl Command

- Work with the Kubectl Command.

- Inspect the Cluster and Pods.

- View a Pod’s Console Output.

- Sign in to a Pod Interactively.

- 2 labs and 1 quiz

Module 5 - Deployment, Jobs, and Scaling

- Deployments
- Ways to Create Deployments
- Services and Scaling
- Updating Deployments
- Rolling Updates
- Blue/Green Deployments
- Canary Deployments
- Managing Deployments
- Jobs and CronJobs
- Parallel Jobs
- CronJobs
- Cluster Scaling
- Downscaling
- Node Pools
- Controlling Pod Placement
- Affinity and Anti-Affinity
- Pod Placement Example
- Taints and Tolerations
- Getting Software into your Cluster
- 3 labs and 1 quiz

Module 6 - GKE Networking

- Introduction
- Pod Networking
- Services
- Finding Services
- Service Types and Load Balancers
- How Load Balancers Work
- Ingress Resource
- Container-Native Load Balancing

- Network Security

- 2 labs and 1 quiz

Module 7 - Persistent Data and Storage

- Volumes

- Volume Types

- The PersistentVolume Abstraction

- More on PersistentVolumes

- StatefulSets

- ConfigMaps

- Secrets

- 2 labs and 1 quiz

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 ClusterRole Bindings for

- Accessing Cluster-scoped Resources

- Define Kubernetes Pod Security Policies

- Understand the Structure of IAM

- Define IAM roles and Policies for Kubernetes Engine Cluster Administration

- 2 labs and 1 quiz

Module 9 - Logging and Monitoring

- Use Cloud Monitoring to monitor and manage availability and performance

- Locate and inspect Kubernetes logs

- Create probes for wellness checks on live applications

- 2 labs and 1 quiz

Module 10 - Using Google Cloud 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 Google Cloud Storage Services

- Understand Use Cases for Cloud Storage, Cloud SQL, Cloud Spanner, Cloud Bigtable, Cloud Firestore, and BigQuery from within a Kubernetes Application

- 1 lab and 1 quiz

Module 11 - Logging and Monitoring

- CI/CD overview

- CI/CD for Google Kubernetes Engine

- CI/CD Examples

- Manage application code in a source repository that can trigger code changes to a continuous delivery pipeline.

- 1 lab, Access Control and Security in Kubernetes and Kubernetes Engine, Logging and Monitoring, Using Google Cloud Managed Storage Services from Kubernetes Applications, Persistent Data and Storage, GKE Networking, Workloads: Deployments and Jobs, Google Kubernetes Engine Networking, Access Control and Security in Kubernetes and Google Kubernetes Engine, Google Kubernetes Engine Logging and Monitoring, Using Google Cloud Managed Storage Services with Google Kubernetes Engine, Using CI/CD with Google Kubernetes Engine, Containers and Kubernetes in Google Cloud, Introduction to Google Cloud, Kubernetes Architecture, Kubernetes Operations, Deployments, and Scaling

Skills You Will Learn:

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Frequently Asked Questions

Q: What delivery options are available for Architecting with Google Kubernetes Engine?

We offer multiple delivery formats:

- Live Instructor-Led Classroom Online (Virtual/Live Online)
- Traditional Instructor-Led Classroom Training (ILT)
- On-site delivery at your offices anywhere in United Kingdom
- Private dedicated courses customized for your team

Q: How many CPD hours does this course provide?

The 2-day Architecting with Google Kubernetes Engine course provides up to 13.0 CPD hours of structured learning. CPD certificates can be provided upon request.

Q: What is the duration of the Architecting with Google Kubernetes Engine training?

The training takes place over 2 day(s), with each day lasting approximately 16.00 hours including breaks for lunch and refreshments.

Q: Do you provide corporate training for Architecting with Google Kubernetes Engine?

Yes, we provide corporate training, dedicated training, and closed classes for Architecting with Google Kubernetes Engine. Training can take place anywhere in United Kingdom including London, Manchester, Birmingham, Edinburgh, or live online allowing teams from across United Kingdom or internationally to attend.

Q: What related terms do people search for?

Popular related searches include: Architecting with Google Kubernetes Engine, Architecture & Engineering, AGKE, Google Cloud, vILT

Q: Why choose Nexus Human for Architecting with Google Kubernetes Engine?

Nexus Human is recognized as one of the leading training providers. Our trainers have won multiple awards including:

- Small Firms Best Trainer Award
- National Training Partner of the Year (Ireland) - Multiple Years
- Global Top 30 Instructor Awards (2012, 2019, 2021)
- Tech Excellence Award Nominations
- Learning Performance Institute (LPI) External Training Provider Sponsor 2024

Q: Are there any discount codes available?

Yes! Use discount code **PENPAL5** when booking your Architecting with Google Kubernetes Engine training. Please note that only one discount code can be used per booking and cannot be combined with other special offers.

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