 

“AZƏRBAYCAN HAVA YOLLARI” CJSC NATIONAL AVIATION ACADEMY”

**Topic:** What is Kubernetes

**Subject:** Operating system

**Teacher:** Sahmaliyev Memmed

**Student:** Aliyeva Qumru

**Group:** 2450-I

**Date:** 25.11.22

**Signature:**

**Baku 2022**

***What is Kubernetes?***

With the widespread adoption of containers among organizations, Kubernetes, the container-centric management software, has become the de facto standard to deploy and operate containerized applications. Google Cloud is the birthplace of Kubernetes—originally developed at Google and released as open source in 2014. Kubernetes builds on 15 years of running Google's containerized workloads and the valuable contributions from the open-source community. Inspired by Google’s internal cluster management system, Borg, Kubernetes makes everything associated with deploying and managing your application easier. Providing automated container orchestration, Kubernetes improves your reliability and reduces the time and resources attributed to daily operations.

Learn more about GKE, Google Cloud’s managed Kubernetes.

Ready to get started? New customers get $300 in free credits to spend on Google Cloud.

Kubernetes defined

Kubernetes (sometimes shortened to K8s with the 8 standing for the number of letters between the “K” and the “s”) is an open-source system to deploy, scale, and manage containerized applications anywhere.

Kubernetes automates operational tasks of container management and includes built-in commands for deploying applications, rolling out changes to your applications, scaling your applications up and down to fit changing needs, monitoring your applications, and more—making it easier to manage applications.

What are the benefits of Kubernetes?

Automated operations

Kubernetes has built-in commands to handle a lot of the heavy lifting that goes into application management, allowing you to automate day-to-day operations. You can make sure applications are always running the way you intended them to run.

Infrastructure abstraction

When you install Kubernetes, it handles the computer, networking, and storage on behalf of your workloads. This allows developers to focus on applications and not worry about the underlying environment.

Service health monitoring

Kubernetes continuously runs health checks against your services, restarting containers that fail, or have stalled, and only making available services to users when it has confirmed they are running.

Solve your business challenges with Google Cloud

New customers get $300 in free credits to spend on Google Cloud.

Get started

Talk to a Google Cloud sales specialist to discuss your unique challenge in more detail.

Contact us

Kubernetes vs. Docker

Often misunderstood as a choice between one or the other, Kubernetes and Docker are different yet complementary technologies for running containerized applications.

Docker lets you put everything you need to run your application into a box that can be stored and opened when and where it is required. Once you start boxing up your applications, you need a way to manage them; and that's what Kubernetes does.

Kubernetes is a Greek word meaning ‘captain’ in English. Like the captain is responsible for the safe journey of the ship in the seas, Kubernetes is responsible for carrying and delivering those boxes safely to locations where they can be used.

Kubernetes can be used with or without Docker

Docker is not an alternative to Kubernetes, so it’s less of a “Kubernetes vs. Docker” question. It’s about using Kubernetes with Docker to containerize your applications and run them at scale

The difference between Docker and Kubernetes relates to the role each play in containerizing and running your applications

Docker is an open industry standard for packaging and distributing applications in containers

Kubernetes uses Docker to deploy, manage, and scale containerized applications

What is Kubernetes used for?

Kubernetes is used to create applications that are easy to manage and deploy anywhere. When available as a managed service, Kubernetes offers you a range of solutions to meet your needs. Here are some common use cases.

Increasing development velocity

Kubernetes helps you to build cloud-native microservices-based apps. It also supports containerization of existing apps, thereby becoming the foundation of application modernization and letting you develop apps faster.

Deploying applications anywhere

Kubernetes is built to be used anywhere, allowing you to run your applications across on-site deployments and public clouds; as well as hybrid deployments in between. So you can run your applications where you need them.

Running efficient services

Kubernetes can automatically adjust the size of a cluster required to run a service. This enables you to automatically scale your applications, up and down, based on the demand and run them efficiently.

Related products and services

Created by the same developers that built Kubernetes, Google Kubernetes Engine (GKE) is an easy-to-use cloud-based Kubernetes service for running containerized applications. GKE can help you implement a successful Kubernetes strategy for your applications in the cloud. With Anthos, Google offers a consistent Kubernetes experience for your applications across on-premises and multiple clouds. Using Anthos, you get a reliable, efficient, and trusted way to run Kubernetes clusters, anywhere.