

GKE

Kubernetes

Legacy issue:

1. Manual
- 2.

App1

A2

Dependencies1

Dep2

OS

OS

Kernel

Kernel

Hypervisor

3. Container

**A block where an application runs. Runs on CI - > app and sep
(Docker to manage containers)**

Kubernetes

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.

C1 C2 C3

Kubernetes

COS

Hypervisor

Cluster - > node - > pod

C1 - > Kube api server - > kubelet - > pod

[node]

Code file → CI

- **Docker: D registry**
- **Git: git**
- **Cloud build: GCR**

Code file -> GCP -> CI -> GCR -> App <- GKEC(deploy)
(local) (shell VM) cd

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Google Cloud

project3

kubernetes

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Kubernetes clusters

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Kubernetes Engine

Kubernetes clusters

Containers package an application so that it can easily be deployed to run in its own isolated environment. Containers are run on Kubernetes clusters. [Learn more](#)

CREATE

DEPLOY CONTAINER

TAKE THE QUICKSTART

Get started with GKE

Overview of GKE clusters [Help document](#)

Choose the types of GKE clusters based on your desired level of control, availability type, mode of operation etc.

Quickstart [Tutorial](#)

Create an Autopilot cluster, which automatically manages nodes, node pools, and other cluster infrastructure.

Use cases for GKE [Help document](#)

Explore use cases, best practices, and industry solutions.

Cluster architecture [Help document](#)

Understand the GKE cluster architecture, including cluster masters, nodes, and node-allocatable resources.

Architecture guides for application development [Documentation](#)

Use cases for GKE [Help document](#)

Explore use cases, best practices, and industry solutions.

Cluster architecture [Help document](#)

Understand the GKE cluster architecture, including cluster masters, nodes, and node-allocatable resources.

CLOUD SHELL

Terminal

(project3-384713)

Open editor

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Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to **project3-384713**.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
user12@cloudshell:~ (project3-384713) \$ gcloud container clusters create kanishk-cluster --zone=us-central1-a --machine-type=n1-standard-1 --num-nodes=2

change the default values use the '--location-policy' flag.
Note: Your Pod address range ('--cluster-ipv4-cidr') can accommodate at most 1008 node(s).
ERROR: (gcloud.container.clusters.create) ResponseError: code=403, message=Insufficient regional quota to satisfy request: resource "SSD_TOTAL_GB": request requires '100.0' and is short '50.0'. project has a quota of '250.0' with '50.0' available. View and manage quotas at <https://console.cloud.google.com/iam-admin/quotas?usage=USED&project=project3-384713>.
user12@cloudshell:~ (project3-384713) \$ gcloud container clusters create kanishk-cluster --zone=us-west1-b --machine-type=n1-standard-1 --num-nodes=2
Default change: VPC-native is the default mode during cluster creation for versions greater than 1.21.0-gke.1500. To create advanced routes based clusters, please pass the '--no-enable-ip-alias' flag
Default change: During creation of nodepools or autoscaling configuration changes for cluster versions greater than 1.24.1-gke.800 a default location policy is applied. For Spot and FVM it defaults to ANY, and for all other VM kinds a BALANCED policy is used. To change the default values use the '--location-policy' flag.
Note: Your Pod address range ('--cluster-ipv4-cidr') can accommodate at most 1008 node(s).
Creating cluster kanishk-cluster in us-west1-b... Cluster is being deployed...working.

```
Node.js v18.12.1
user12@cloudshell:~ (project3-384713) $ nano server.js
user12@cloudshell:~ (project3-384713) $ node server.js
^C
user12@cloudshell:~ (project3-384713) $
```

Hello Kanishk

```
user12@cloudshell:~ (project3-384713) $ ls
python-docs-samples  README-cloudshell.txt  server.js
user12@cloudshell:~ (project3-384713) $ nano Dockerfile
user12@cloudshell:~ (project3-384713) $ ls
Dockerfile  python-docs-samples  README-cloudshell.txt  server.js
user12@cloudshell:~ (project3-384713) $ gcloud builds submit --tag=gcr.io/project3-384713/hello-node:v1
Creating temporary tarball archive of 4494 file(s) totalling 375.6 MiB before compression.
```

CLOUD SHELL Terminal (project3-384713) x (project3-384713) x + Open editor

```
ID: 3aa6a74c-e294-4fdf-9842-457e46d065b2
CREATE TIME: 2023-04-27T10:12:49+00:00
DURATION: 1M31S
SOURCE: gs://project3-384713_cloudbuild/source/1682590308.478918-97942f4dedb0427e841c4a75389067a8.tgz
IMAGES: gcr.io/project3-384713/hello-node:v1
STATUS: SUCCESS
user12@cloudshell:~ (project3-384713) $
```

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Google Cloud project3

DASHBOARD ACTIVITY RECOMMENDATION

Project info

Project name
project3

Project number
870600828456

Project ID
project3-384713

[ADD PEOPLE TO THIS PROJECT](#)

[Go to project settings](#)

CLOUD SHELL Terminal (project3-384713) x (project3-384713) x + Open editor

```
ID: 3aa6a74c-e294-4fdf-9842-457e46d065b2
CREATE TIME: 2023-04-27T10:12:49+00:00
DURATION: 1M31S
SOURCE: gs://project3-384713_cloudbuild/source/1682590308.478918-97942f4dedb0427e841c4a75389067a8.tgz
IMAGES: gcr.io/project3-384713/hello-node:v1
STATUS: SUCCESS
```

container re

PRODUCTS & PAGES

- Container registry
- Images
Container registry
- Marketplace
Container registry
- Settings
Container registry

DOCUMENTATION AND TUTORIALS

- Troubleshooting GKE cluster auto-scaler events
Interactive Tutorial
- Troubleshooting GKE cluster autoscaler events
Interactive Tutorial
- What are containers? | Google Cloud
Containers are lightweight packages of your application code...
- Container Registry
Single place for your team to manage Docker images, perform...

[See more results for documentation and tutorials](#)

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LEARN Tutorial ⓘ

Google Cloud project3 container re Search

Container registry

Images

Settings

hello-node
gcr.io > project3-384713 > hello-node

Filter Enter property name or value

<input type="checkbox"/>	Name	Tags	Virtual size	Created	Uploaded	
<input type="checkbox"/>	d2544d13f9be	v1	247.8 MB	2 minutes ago	1 minute ago	
<input type="checkbox"/>	bab91e860dbb		247.8 MB	12 minutes ago	11 minutes ago	
<input type="checkbox"/>	8e14b856f6ff		247.8 MB	40 minutes ago	40 minutes ago	
<input type="checkbox"/>	7914fb6550ff		247.8 MB	52 minutes ago	51 minutes ago	
<input type="checkbox"/>	7de5f4cdd6a3		247.8 MB	1 hour ago	1 hour ago	

CLOUD SHELL Terminal (project3-384713) x (project3-384713) x + Open editor

Recommended for you

Overview of Container Registry

Help document

Learn about Container Registry.

Quickstart for Container Registry

Help document

Tag and push an image to Container Registry.

Pushing and pulling images

Help document

Push (upload) and pull (download) images.

Configuring access control

Help document

Control access to Container Registry.

Google Cloud project3 kubernetes Search

Kubernetes Engine

Workloads

REFRESH DEPLOY DELETE

OPERATIONS HELP ASSISTANT LEARN

Cluster Namespace RESET SAVE

<input type="checkbox"/>	deploymentkanishk	OK	Deployment	1/1	default	kanishknew-cluster
<input type="checkbox"/>	k-web	OK	Deployment	2/2	default	teksys-kirti
<input type="checkbox"/>	k-web1	OK	Deployment	1/1	default	teksys-kirti
<input type="checkbox"/>	kanishkdep2	OK	Deployment	1/1	default	kanishknew-cluster
<input type="checkbox"/>	kanishkweb	OK	Deployment	1/1	default	kanishknew-cluster
<input type="checkbox"/>	saran-deployment	OK	Deployment	3/3	default	saran-cluster
<input type="checkbox"/>	saran-deployment2	OK	Deployment	1/1	default	saran-cluster
<input type="checkbox"/>	web	OK	Deployment	1/1	default	teksys-harsh

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CLOUD SHELL Terminal (project3-384713) x (project3-384713) x + Open editor

```
CREATE_TIME: 2023-04-27T10:12:49+00:00
DURATION: 1M31S
SOURCE: gs://project3-384713_cloudbuild/source/1682590308.478918-97942f4dedb0427e841c4a75389067a8.tgz
IMAGES: gcr.io/project3-384713/hello-node:v1
STATUS: SUCCESS
user12@cloudshell:~ (project3-384713) $ kubectl create deployment kanishkdep2 --image=gcr.io/project3-384713/hello-node:v1
deployment.apps/kanishkdep2 created
user12@cloudshell:~ (project3-384713) $
```

kubect1 create deployment kanishkdep2 --image=gcr.io/project3-384713/hello-node:v1

← → ↺ 🏠 console.cloud.google.com/gcr/images/project3-384713?referrer=search&project=project3-384713

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👤 Container registry

Repositories

Images

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Repositories

project3

Filter Enter property name or value

Name ↑	Hostname ?	Visibility ?
hello-node	gcr.io	Private
hello-node1	gcr.io	Private
kanishk-node	gcr.io	Private

CLOUD SHELL

Terminal (project3-384713) × +

[Open editor](#)

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```
v1: digest: sha256:b6a80cc9a1838c353a7dda4ee92b767720c89d6553e24598189b5bc6f32c42c8 size: 2001
DONE
ID: be4a91a0-8a94-4488-8d89-a6cb0538e011
CREATE_TIME: 2023-04-28T04:18:36+00:00
DURATION: 54S
SOURCE: gs://project3-384713_cloudbuild/source/1682655451.994619-892e64f5d29c4fbfb50ce6576164c798.tgz
IMAGES: gcr.io/project3-384713/kanishk-node:v1
STATUS: SUCCESS
user12@cloudshell:~ (project3-384713)$ kubectl create deployment deploymentkanishk --image=gcr.io/project3-384713/kanishk-node:v1
deployment.apps/deploymentkanishk created
user12@cloudshell:~ (project3-384713)$ kubectl expose deployment deploymentkanishk --type="LoadBalancer" --port=80
service/deploymentkanishk exposed
user12@cloudshell:~ (project3-384713)$
```

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Kubernetes Engine

Services & Ingress

Services & Ingress

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Services & Ingress

Cluster Namespace RESET SAVE

SERVICES INGRESS

Services are sets of pods with a network endpoint that can be used for discovery and load balancing. Ingresses are collections of rules for routing external HTTP(S) traffic to Services.

Filter [Is system object: False](#) Filter services and ingresses

	Name ↑	Status	Type	Endpoints	Pods	Namespace	Clusters
<input type="checkbox"/>	deploymentkanishk	OK	External load balancer	34.27.157.234.80	1/1	default	clustername