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

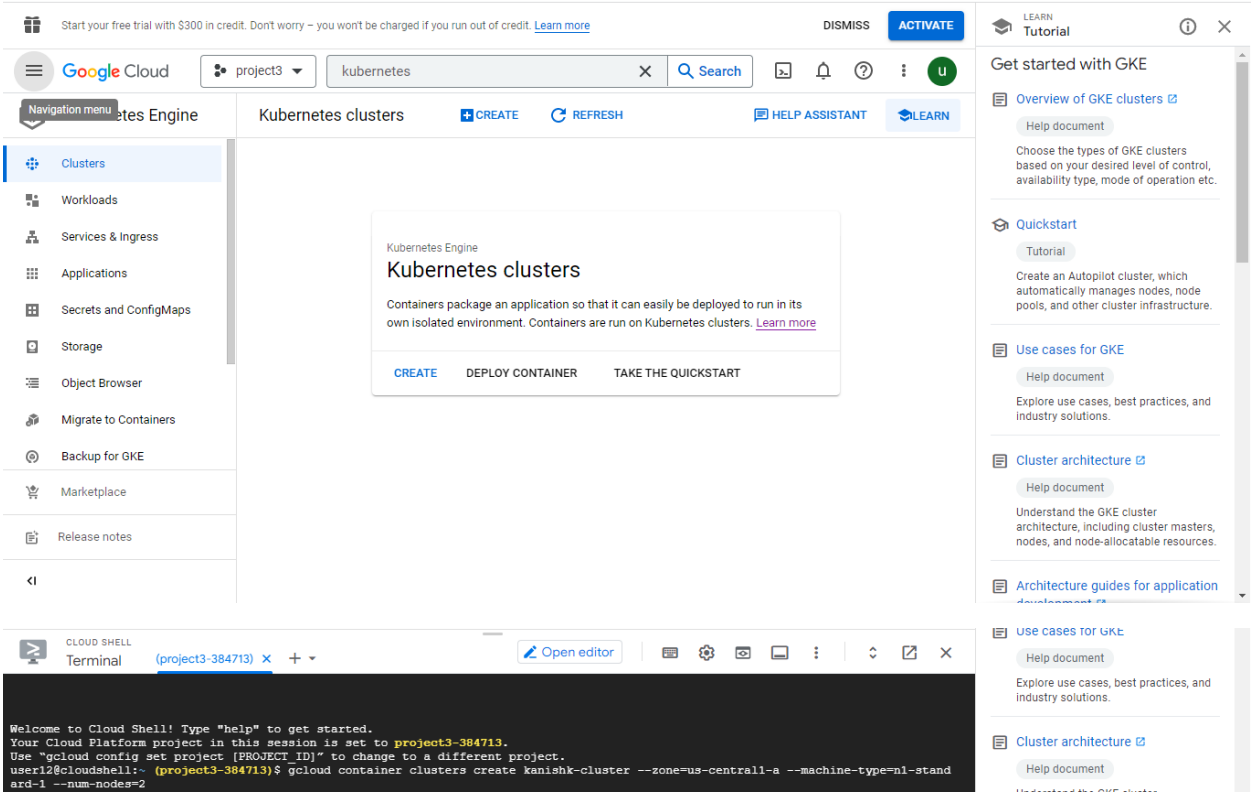
C1 - > Kube api server - > kubelet - > pod

[node]

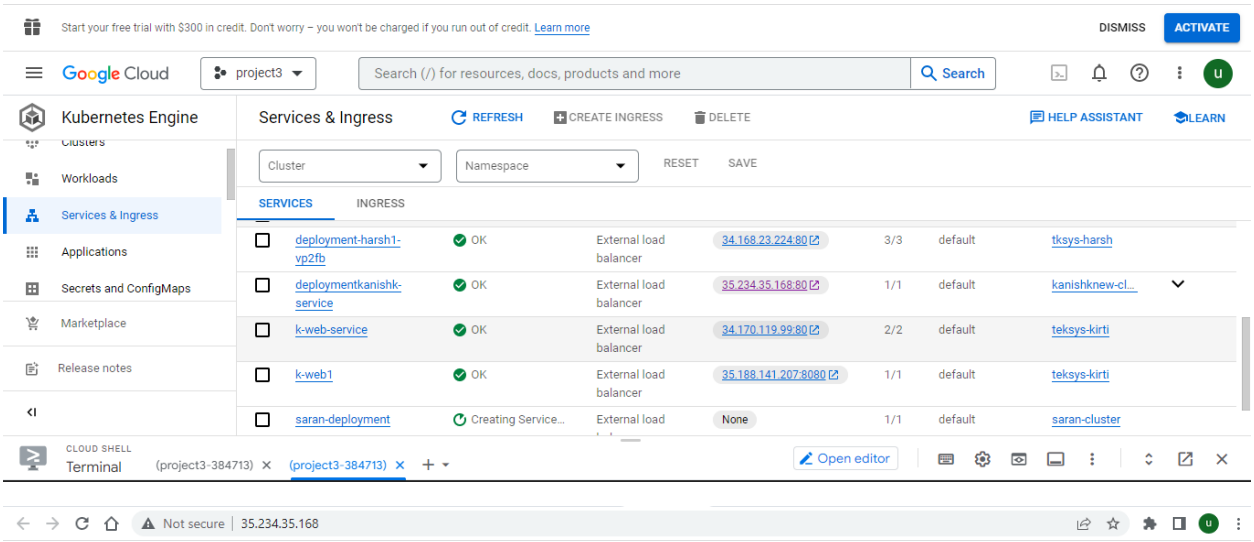
Code file → CI

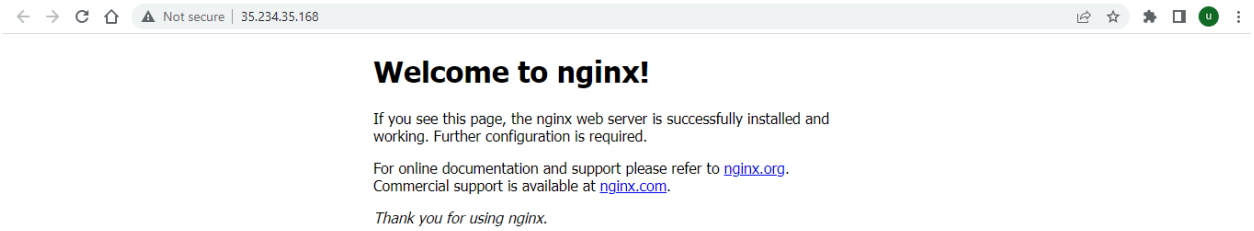
- **Docker: D registry**
- **Git: git**
- **Cloud build: GCR**

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




```
hange 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 PVM it defaults to ANY, and for all other VM kinds a BALANCED policy is used. To c
hange 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.
```






```
gcloud builds submit --tag=gcr.io/project3-384713/hello-node:v1
```

```
user12@cloudshell:~ (project3-384713)$ kubectl expose deployment deploymentkanishk --type="LoadBalancer" --port=8080
service/deploymentkanishk exposed
user12@cloudshell:~ (project3-384713)$ nano server.js
```

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

8080-cs-5a31cb7a-5a80-4d90-ab98-26e27c711ac0.cs-asia-southeast1-bool.cloudshell.dev/?authuser=0

```
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) (project3-384713) 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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Project info
Project name
project3
Project number
870600828456
Project ID
project3-384713
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PRODUCTS & PAGES
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Container registry

DOCUMENTATION AND TUTORIALS
Troubleshooting GKE cluster auto-scaler events
Interactive Tutorial
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What are containers? | Google Cloud
Containers are lightweight packages of your application cod...
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Single place for your team to manage Docker images, perfor...
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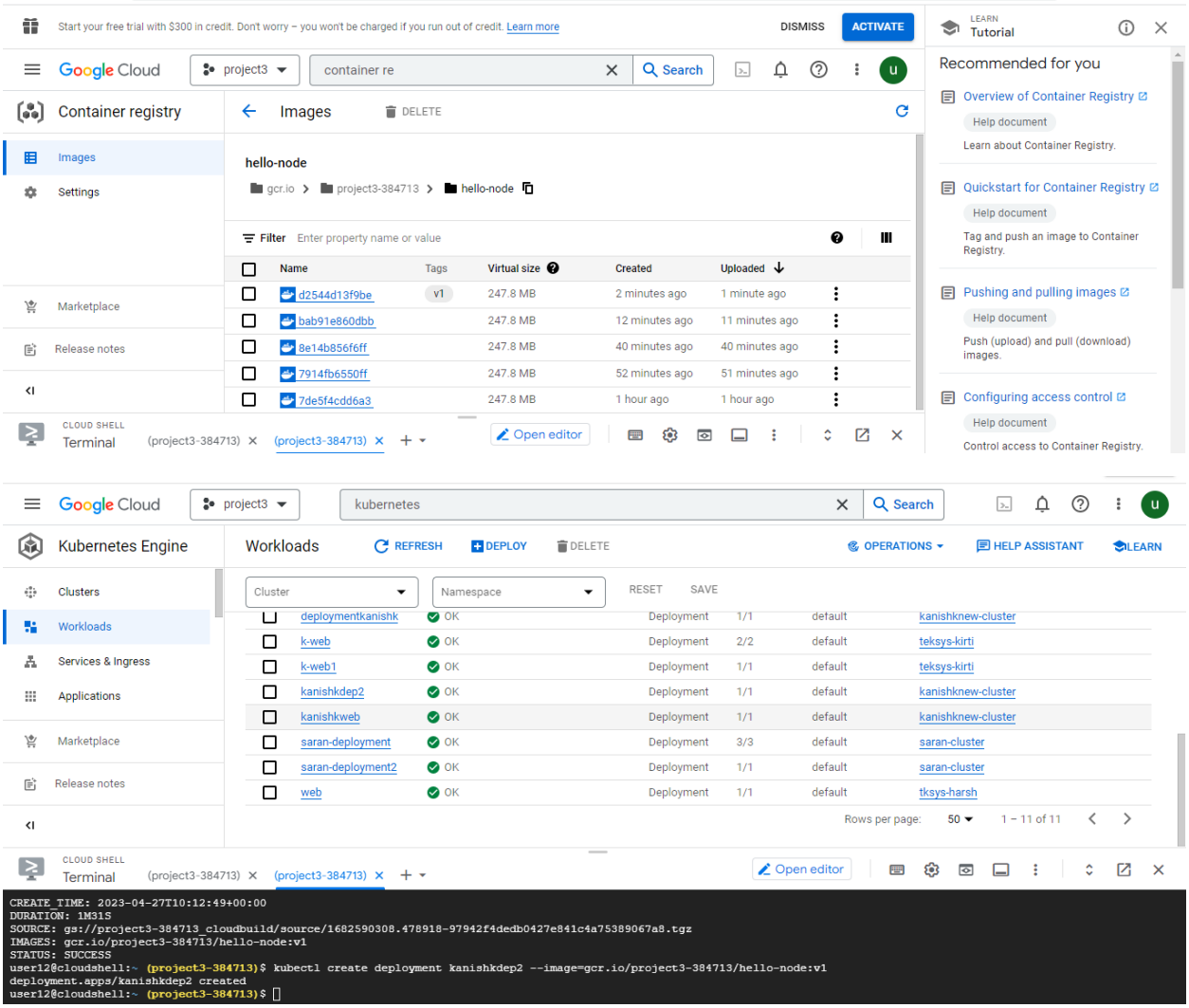
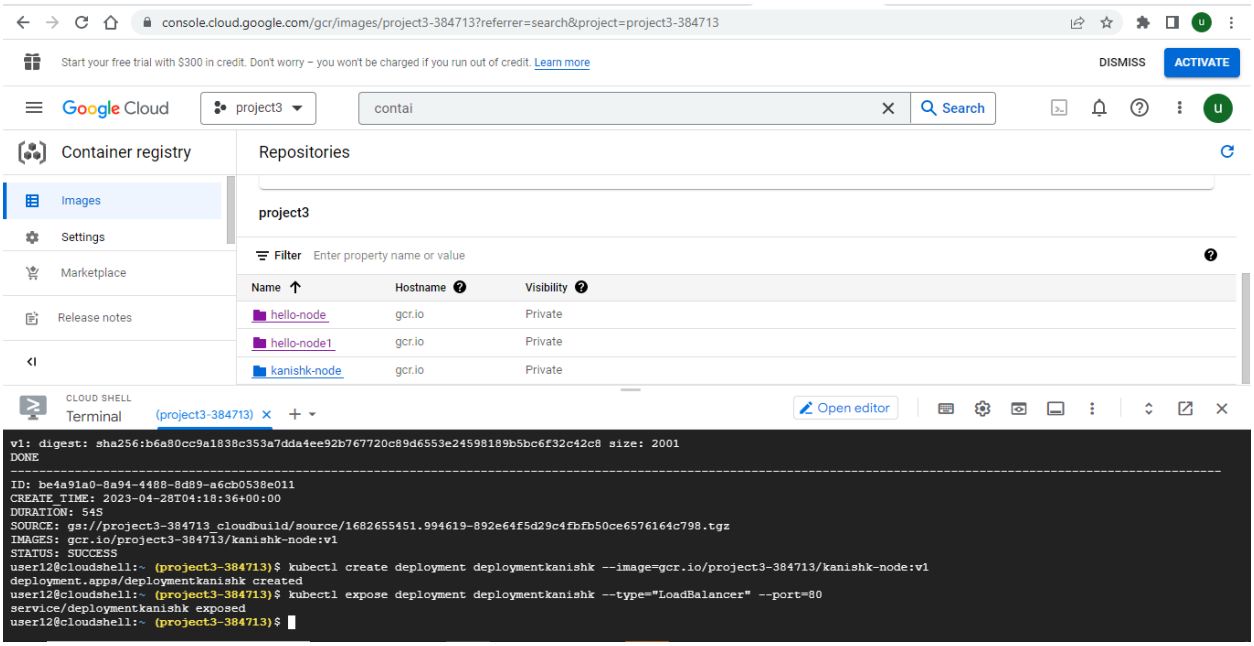
tform status
ervices in the europe-west9 region are
:00:00)
cloud.google.com
board

CLOUD SHELL
Terminal (project3-384713)

```
ID: 3aa6a74c-e294-4fdf-9842-457e46d065b2
CREATE_TIME: 2023-04-27T10:12:49+00:00
DURATION: 1M31S
SOURCE: gs://project3-384713_cloudbuild/source/16
IMAGES: gcr.io/project3-384713/hello-node:v1
```



kubectl 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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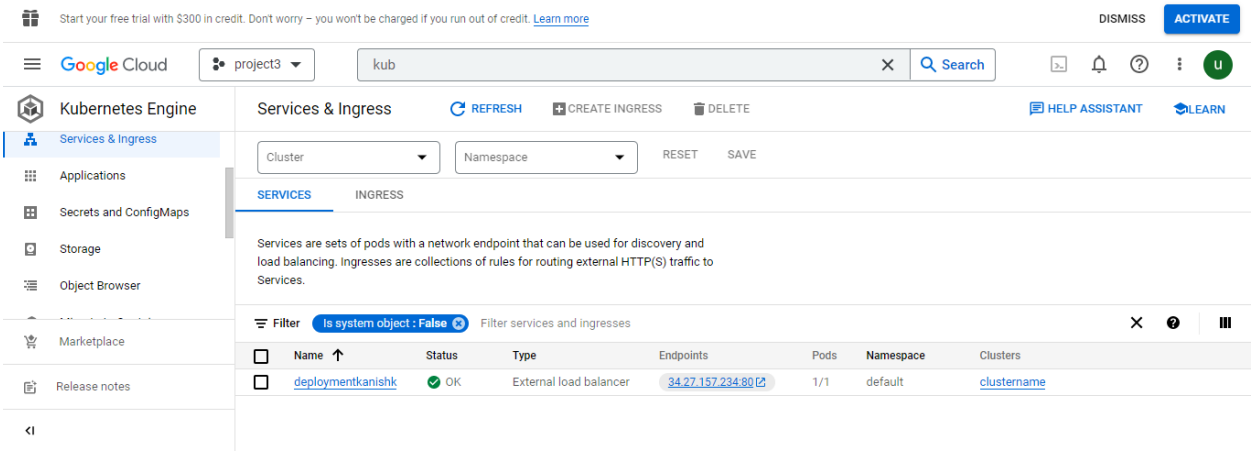
Enter property name or value
Name
Hostname
Visibility
hello-node
gcr.io
Private
hello-node1
gcr.io
Private
kanishk-node
gcr.io
Private
CLOUD SHELL
Terminal
(project3-384713)
Open editor
v1: digest: sha256:b6a80cc9a1838c353a7dda4ee92b767720c89d6553e24598189b5bc6f32c42c8 size: 2001
DONE
ID: be4a91a0-8a94-4488-8d89-a6cb0538e011
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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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
deploymentkanishk
OK
External load balancer
34.27.157.234:80
1/1
default
clustername