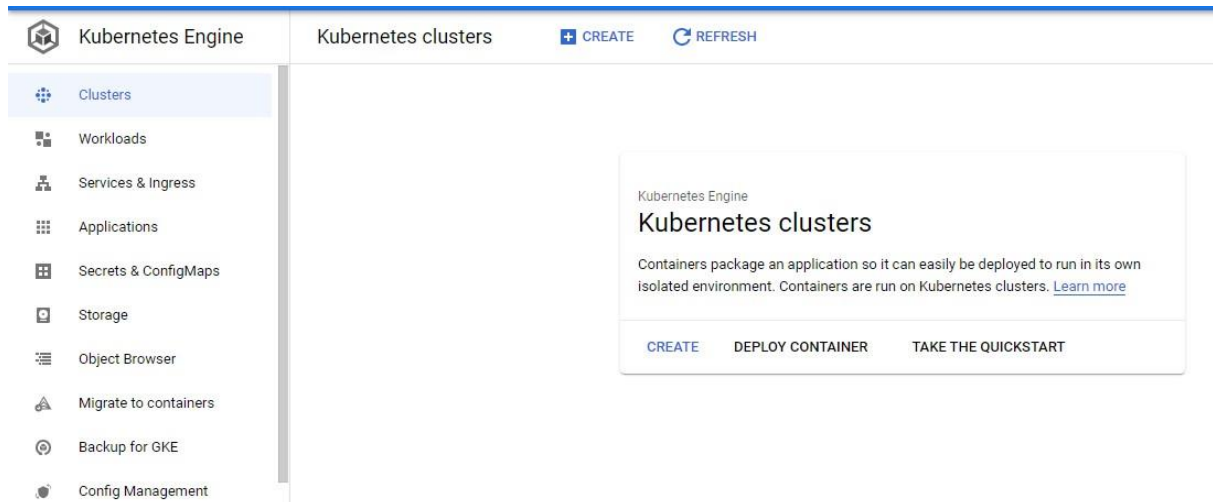


Module 4 ---- Assignment

Create a Kubernetes cluster.

Go to Kubernetes cluster and create.



Select Standard.

Create cluster

Select the cluster mode that you want to use.



Compare cluster modes to learn more about their differences.

[COMPARE](#)



GKE Standard

A pay-per-node Kubernetes cluster where you configure and manage your nodes.

[Learn more](#)

[CONFIGURE](#)



GKE Autopilot

A pay-per-Pod Kubernetes cluster where GKE manages your nodes with minimal configuration required. [Learn more](#)

[CONFIGURE](#)



[CANCEL](#)

Provide details.

[+ ADD NODE POOL](#)[🗑 REMOVE NODE POOL](#)[📖 USE A SETUP GUIDE ▾](#)**Name**

Cluster names must start with a lowercase letter followed by up to 39 lowercase letters, numbers, or hyphens. They can't end with a hyphen. You cannot change the cluster's name once it's created.

Location type

Resource prices may vary between certain regions. [Learn more](#)

☒ Zonal☐ Regional**Zone**☐ Specify default node locations

Increase availability by selecting more than one zone

Current default: asia-south1-a

Control plane version

Choose whether you'd like to upgrade the cluster's control plane version manually or let GKE do it automatically. [Learn more](#).

☐ Static version**CREATE****CANCEL**Equivalent **REST** or **COMMAND**

Control plane version

Choose whether you'd like to upgrade the cluster's control plane version manually or let GKE do it automatically. [Learn more.](#)

- ☐ Static version
Manually manage the cluster's control plan version upgrades.
- ☒ Release channel
Let GKE automatically manage the cluster's control plane version. [Learn more.](#)

Release channel
Regular channel (default)

Version
1.21.11-gke.1100 (default)

These versions have passed internal validation and are considered production-quality, but don't have enough historical data to guarantee their stability. Known issues generally have known workarounds. [Release notes](#)

CREATE

CANCEL

Equivalent REST or COMMAND LINE

Kubernetes clusters

+ CREATE

+ DEPLOY



REFRESH

OPERATIONS

OVERVIEW

COST OPTIMIZATION

Filter Enter property name or value

<input type="checkbox"/> Status	Name ↑	Location	Number of nodes	Total vCPUs	Total memory	Notifications	Lab
<input type="checkbox"/> 	cluster-1-gce	asia-south1-a	3 	0	0 GB		—

Cluster creation in progress.

Cluster created.

Kubernetes clusters

CREATE

DEPLOY

REFRESH

OPERATIONS

HELP ASSISTANT

OVERVIEW

COST OPTIMIZATION

Filter

Enter property name or value

<input type="checkbox"/> Status	Name ↑	Location	Number of nodes	Total vCPUs	Total memory	Notifications	Labels
<input type="checkbox"/>	cluster-1-gce	asia-south1-a	3	6	12 GB		—

Click on Deploy to deploy nginx container.

←

Create a deployment

1

Container

Edit container

^

☒ Existing container image

☐ New container image

Image path *

nginx:latest

SELECT

Enter your image path, or choose from Google Container Registry. You can also try to deploy with official nginx image nginx:latest.

Environment variables

+ ADD ENVIRONMENT VARIABLE

Initial command

Overrides the default entrypoint of the container image.

CANCEL

DONE

|

2 Configuration

A deployment is a configuration which defines how Kubernetes deploys, manages, and scales your container image. Kubernetes will ensure your system matches this configuration.

Application name *

nginx-1

Namespace *

default

Labels

Key 1 *

app

Value 1

nginx-1

[+ ADD KUBERNETES LABEL](#)

Configuration YAML

Configuration YAML

Kubernetes deployments are defined declaratively using YAML files. The best practice is to store these files in version control, so you can track changes to your deployment configuration over time.

[VIEW YAML](#)

Cluster

Kubernetes Cluster
cluster-1-gce (asia-south1-a)

Cluster in which the deployment will be created.

[CREATE NEW CLUSTER](#)

DEPLOY

← Deployment details

OPERATIONS

HELP ASSISTANT

× Documentation

✓ nginx-1

To let others access your deployment, expose it to create a service

[EXPOSE](#)

OVERVIEW

DETAILS

REVISION HISTORY

EVENTS

LOGS

YAML

1 hour

CPU

1

Memory

1

Disk

1

No data is available for the selected time frame.

No data is available for the selected time frame.

No data is available for the selected time frame.

UTC+5:30 3:00 PM 0

UTC+5:30 3:00 PM 0

UTC+5:30 3:00 PM 0

Expose deployment

To let users access your deployment, you can expose it to external traffic

[EXPOSE](#)

Documentation

[Deployments](#) - a replicated, stateless application cluster

[Pods](#) - the smallest deployable unit in Kubernetes

[Services](#) - allow your application to receive traffic

[Autoscaling pods](#) - scale the application based on custom metrics

3 pods created by default.

Active revisions

Revision ↓	Name	Status	Summary	Created on	Pods running
1	nginx-1-754ddbcd6c	✓ OK	nginx-1: nginx:latest	Jun 1, 2022, 3:15:12 PM	3/3

Managed pods

Revision	Name	Status	Restarts	Created on ↑
1	nginx-1-754ddbcd6c-x2zsl	✓ Running	0	Jun 1, 2022, 3:15:12 PM
1	nginx-1-754ddbcd6c-jv449	✓ Running	0	Jun 1, 2022, 3:15:12 PM
1	nginx-1-754ddbcd6c-2fxfg	✓ Running	0	Jun 1, 2022, 3:15:12 PM

Exposing services ?

Expose to internet.

[←](#) Expose a deployment

Exposing a deployment creates a Kubernetes Service. A service lets your deployment receive traffic and defines how your deployment is

Port mapping

Port 1
80 ?

Target port 1 ?

Protocol 1
TCP ?

+ ADD PORT MAPPING

Service type
Load balancer ?

Service name
nginx-2-service

EXPOSE

VIEW YAML

* Indicates required field

It will create a loadbalancer in background.

Service details

REFRESH

EDIT

DELETE

KUBECTL

nginx-2

Waiting for load balancer with external IP

Creating new service

Waiting for load balancer with external IP

HIDE ALL STEPS

Expose to the internet.

Cluster

Namespace

RESET

SAVE

SERVICES

INGRESS

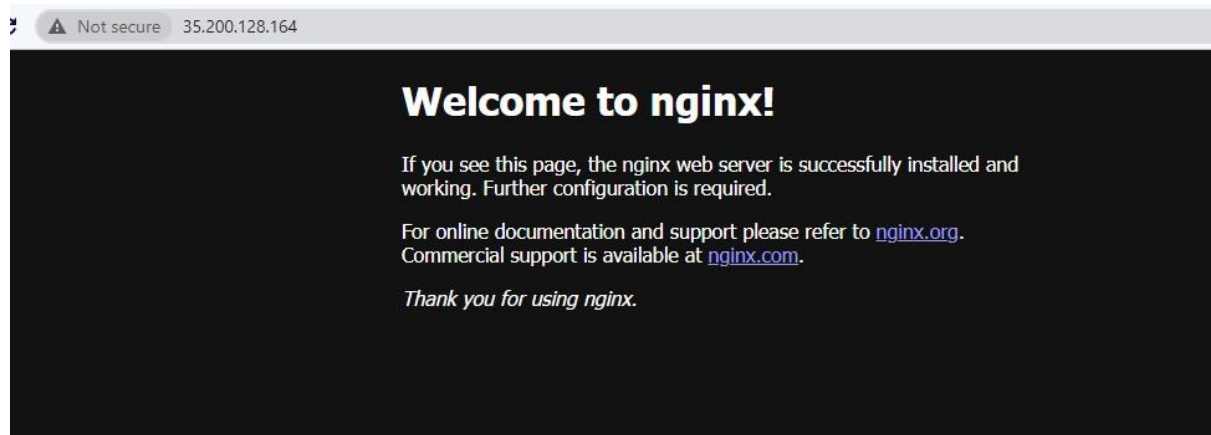
Services are sets of Pods with a network endpoint that can be used for discovery and load balancing. Ingresses are collections of rules for routing external HTTP(S) traffic to Services.

Filter

Is system object : False

Filter services and ingresses

<input type="checkbox"/>	Name ↑	Status	Type	Endpoints	Pods	Namespace	Clusters
<input type="checkbox"/>	nginx-2-service	OK	External load balancer	35.200.128.164:80	3/3	default	cluster-1-gce



Deploy a nodejs application on App Engine standard using gcloud

Clone this repository.

```
arpitacs0024@cloudshell:~$ cloudshell open --repo url "https://github.com/GoogleCloudPlatform/nodejs-docs-samples" --page "editor" --force_new clone
2022/06/07 14:37:37 Cloning https://github.com/GoogleCloudPlatform/nodejs-docs-samples into /home/arpitacs0024/cloudshell_open/nodejs-docs-samples-5
Cloning into '/home/arpitacs0024/cloudshell_open/nodejs-docs-samples-5'...
remote: Enumerating objects: 27689, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 27689 (delta 0), reused 3 (delta 0), pack-reused 27685
Receiving objects: 100% (27689/27689), 21.01 MiB | 9.12 MiB/s, done.
Resolving deltas: 100% (18604/18604), done.
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5$ cd appengine/hello-world/standard
```

Run the below command.

```
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard$ npm install
added 158 packages, and audited 159 packages in 7s

28 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard$ npm start

> appengine-hello-world@0.0.2 start
> node app.js

App listening on port 8080
Press Ctrl+C to quit.
```

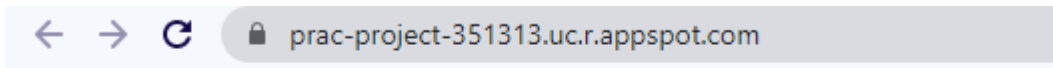
Now, Deploy the app using below command.

```
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard$ gcloud config set project prac-project-351313
Updated property [core/project].
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$ gcloud app deploy
Initializing App Engine resources...done.
Services to deploy:

descriptor:          [/home/arpitacs0024/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard/app.yaml]
source:              [/home/arpitacs0024/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard]
target project:      [prac-project-351313]
target service:      [default]
target version:      [20220607t144507]
target url:          [https://prac-project-351313.uc.r.appspot.com]
target service account: [App Engine default service account]
```

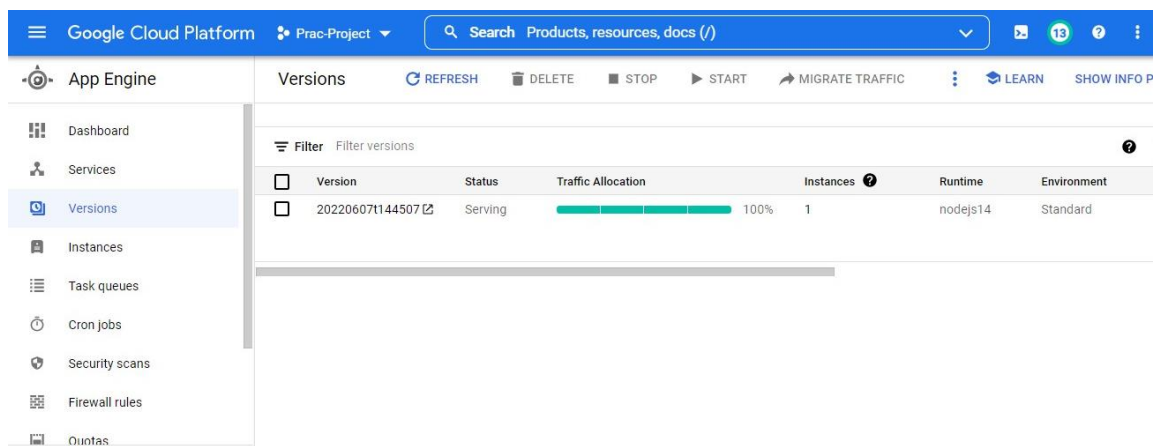
To view your application in the web browser.

```
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$ gcloud app browse
Did not detect your browser. Go to this link to view your app:
https://prac-project-351313.uc.r.appspot.com
```



Hello, world!

On console, It is created as ver1.



Edit the app.js file as Hello world from intellipaat.

Deploy as ver2.

```
app.js  app.yaml  node_modules  package.json  package-lock.json  README.md  test
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$ vi app.js
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$ gcloud app deploy -v ver2
Services to deploy:

descriptor:      [/home/arpitacs0024/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard/app.yaml]
source:          [/home/arpitacs0024/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard]
target project:  [prac-project-351313]
target service:  [default]
target version:  [ver2]
target url:      [https://prac-project-351313.uc.r.appspot.com]
target service account: [App Engine default service account]

Do you want to continue (Y/n)? y
Beginning deployment of service [default]...
```

Browse it.

```
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$ gcloud app browse
Did not detect your browser. Go to this link to view your app:
https://prac-project-351313.uc.r.appspot.com
arpitacs0024@cloudshell:~/cloudshell_open/nodejs-docs-samples-5/appengine/hello-world/standard (prac-project-351313)$
```

← → ↻ prac-project-351313.uc.r.appspot.com

Hello, world from intellipaat

Versions									
REFRESH DELETE STOP START MIGRATE TRAFFIC LEARN SHOW INFO PANEL									
Filter Filter versions ? ⋮									
<input type="checkbox"/>	Version	Status	Traffic Allocation	Instances ?	Runtime	Environment	Size	Se	
<input type="checkbox"/>	ver2	Serving	<div><div></div></div> 100%	0	nodejs14	Standard	4.3 MB	pr	35
<input type="checkbox"/>	ver1	Serving	<div><div></div></div> 0%	0	nodejs14	Standard	4.3 MB	pr	35

Finally deploy a test instance, and load test on your instance with 5000 requests (do this using apache-utils)

Create an instance.

INSTANCES									
INSTANCE SCHEDULES									
VM instances are highly configurable virtual machines for running workloads on Google infrastructure. Learn more									
Filter Enter property name or value ? ⋮									
<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect	
<input type="checkbox"/>	✓	instance-1	asia-south1-c			10.160.0.11 (nic0)	34.100.194.195 (nic0)	SSH ▾	⋮

Update the VM and install apache utils.

```

Reading package lists... Done
arpitacs0024@instance-1:~$ sudo apt-get install apache2-utils
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libapr1 libaprutil1
The following NEW packages will be installed:
  apache2-utils libapr1 libaprutil1
0 upgraded, 3 newly installed, 0 to remove and 7 not upgraded.
Need to get 456 kB of archives.
After this operation, 1089 kB of additional disk space will be used.
Do you want to continue? [Y/n]

```

Run the below command for 5000 requests- Auto scaling

```

arpitacs0024@instance-1:~$ ab -n 5000 -c 1000 https://prac-project-351313.uc.r.appspot.com/
This is ApacheBench, Version 2.3 <$Revision: 1879490 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking prac-project-351313.uc.r.appspot.com (be patient)
Completed 500 requests
Completed 1000 requests
Completed 1500 requests
Completed 2000 requests
Completed 2500 requests
Completed 3000 requests
Completed 3500 requests
Completed 4000 requests
Completed 4500 requests

```

Multiple requests .

```

Every 2.0s: gcloud app instances list                                cs-558976651576-default: Tue Jun  7 16:04:07 2022

SERVICE: default
VERSION: ver1
ID: 00c61b117c63c99f55f0de492509277f4e5517b6c7f20736532552633daeff1b03d28f3e2bfeeadb92e4f6b4ae62cc507d4e11e4b7686a
VM STATUS: N/A
VM LIVENESS:
DEBUG_MODE:

SERVICE: default
VERSION: ver2
ID: 00c61b117c007637d88d93148b605e750301dc91b2c849df4b20f0bb553c7bbc9de9e1247cf41fd9ff843b8724ff2b48493fd9450067105f28e2cf
VM STATUS: N/A
VM LIVENESS:
DEBUG_MODE:

SERVICE: default
VERSION: ver2
ID: 00c61b117c4f4c3558e8f462eb78e605e9f9387027edd168959c2b7f76a5abd1936013c5dd81f873a83db81de344dde79d9f1149cdb5f5d8dd4ea73

```

Multiple instances provisioned.

Google Cloud Platform

Prac-Project

Search Products, resources, docs (/)

App Engine

Dashboard

Services

Versions

Instances

Task queues

Cron jobs

Security scans

Firewall rules

Outages

Release Notes

Instances

REFRESH

DELETE

Instances

	ID	QPS	Latency	Requests	Errors	Memory
	00c61b117c007637d88d93148b605e7	0	0 ms	1405	0	56.6 MB
	00c61b117c4f4c3558e8f462eb78e605	0	0 ms	1058	0	55.8 MB
	00c61b117c609d5b962380ccc5dd35d	0	0 ms	574	0	59.1 MB
	00c61b117c665de9473660da1e9c9f1	0	0 ms	1055	0	55.3 MB
	00c61b117c78279411d508d7a72e612	0	0 ms	354	0	54.6 MB
	00c61b117c8867f54787a501f469884	0	0 ms	110	0	53.9 MB
	00c61b117cee2d11e44ee4bd9d9d9f8	0	0 ms	127	0	54.1 MB