

Task 1

Introduction

As a part of a cutting-edge technology team of an innovative company, I am responsible for designing, developing and securing a modern ecommerce-application that promises to shape the landscape of online shopping we do. My journey begins with setting up the initial infrastructure for the project that includes creating a Kubernetes cluster on GKE (Google Kubernetes Engine) which provides us all the computing resources to host our application.

Following is the step-by-step documentation on how to create a cluster on GKE:

Prerequisites:

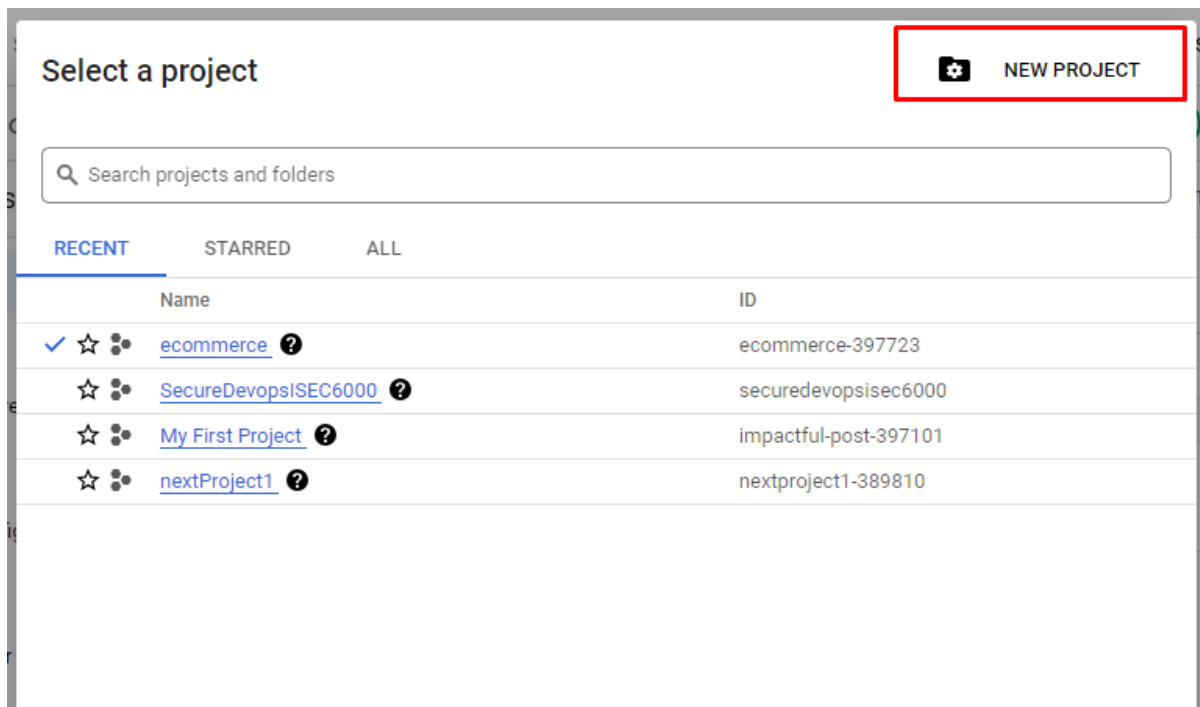
- 1) Ensure you have a Google Cloud account.
- 2) Install the gcloud command-line tool.
- 3) Install kubectl for managing the cluster

Step 1:

Log in to your Google cloud console. If you don't have one, you need to create one and login. Once you log in to the console.

Step 2:

You need to create a project. To create a project click “**New Project**” as shown in the screenshot below:



Once you click “**New project**”, you will be redirected to the new page.

New Project



You have 21 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[MANAGE QUOTAS](#)


Project name *

My Project 64558



Project ID: applied-shade-397801. It cannot be changed later. [EDIT](#)

Location *

 No organization

[BROWSE](#)

Parent organization or folder

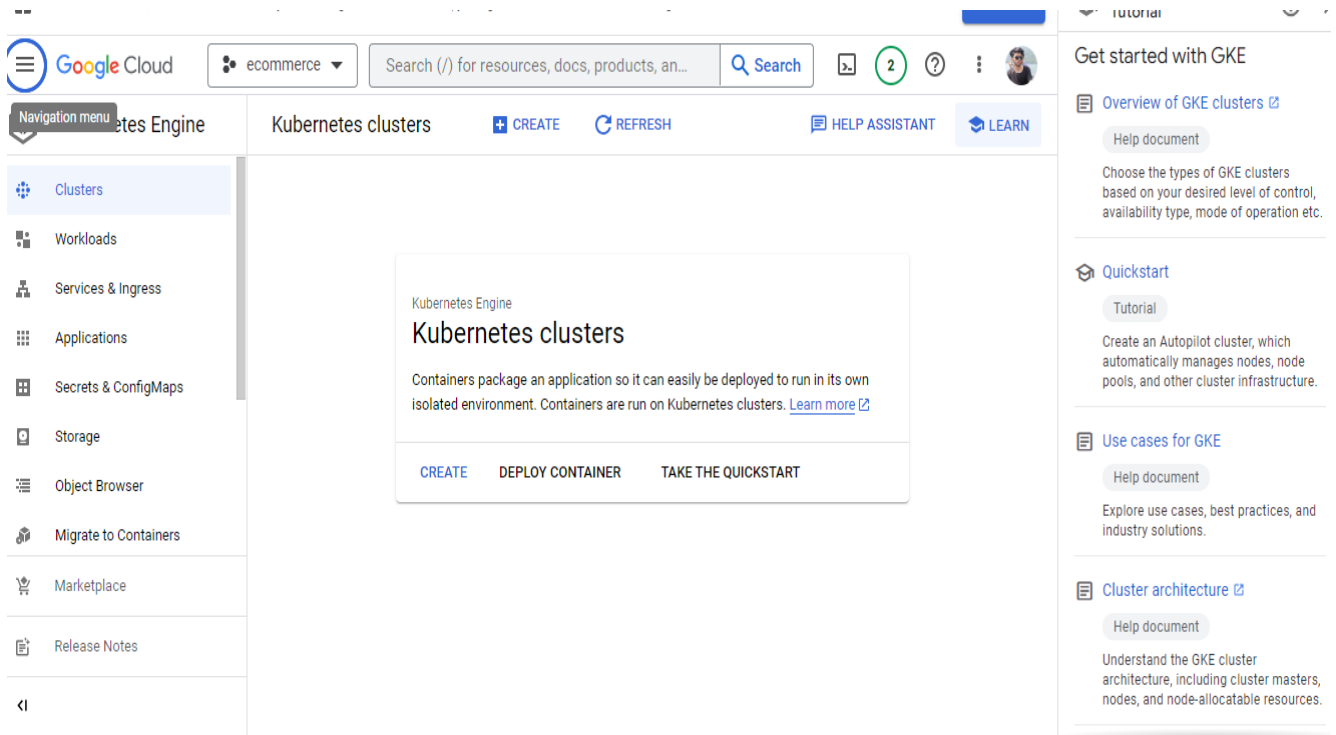
CREATE

CANCEL

Type your Project name relevant to your project and click “**Create**”. Once you create your project, you are good to go to create clusters for the project.

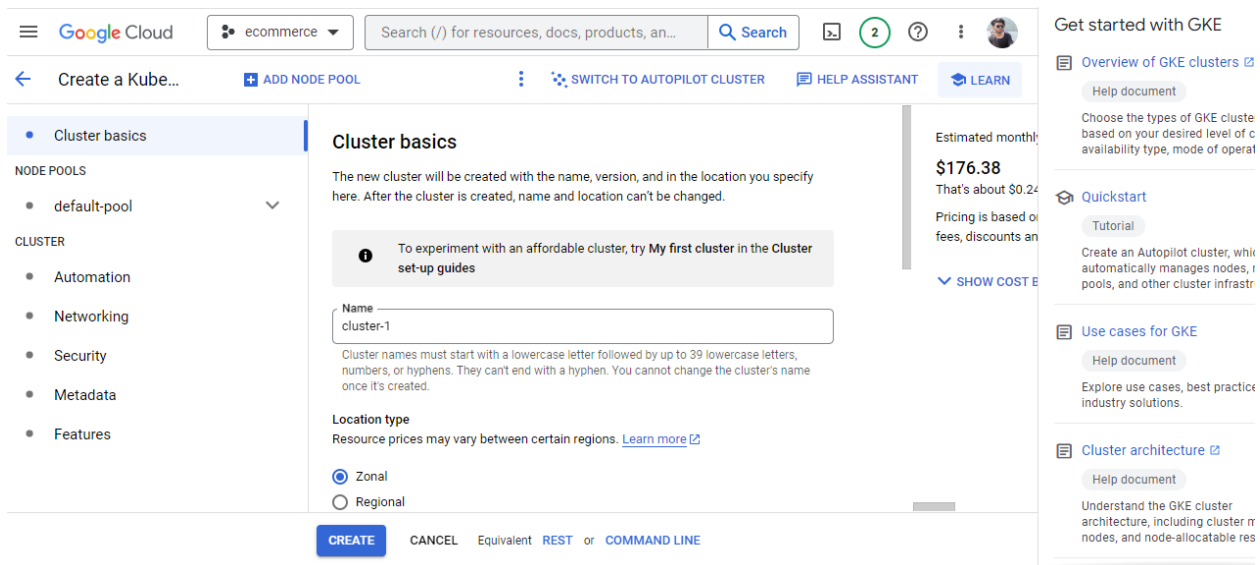
Step 3:

I have created my project as “ecommerce”. Navigate to your project and click “**Create**” under Kubernetes Clusters.



Once you click “**Create**”, you will be redirected to the new page where you have to provide the configuration details of your project.

Step 3:



Provide the name of your cluster and location too.

To experiment with an affordable cluster, try **My first cluster** in the **Cluster set-up guides**

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

CREATE CANCEL Equivalent REST or COMMAND LINE

\$217.61
That's about \$0.30 per hour
Pricing is based on fees, discounts and other factors

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.

Lightshot
Your screenshot is copied to clipboard

I have created my cluster as “ecommerce-cluster” and selected ‘australia-southeast1-b’ as a location.

NOTE: While choosing a location while creating a cluster, it is very important to consider the factors such as costs, availability of services, network connectivity and so on.

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 version upgrades. GKE will only upgrade the control plane and nodes if it's necessary to maintain security and compatibility, as described in the release schedule. [Learn more](#)

☒ Release channel
Let GKE automatically manage the cluster's control plane version. [Learn more](#)

Release channel

Version

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](#)

Estimated monthly cost
\$217.61
That's about \$0.30 per hour
Pricing is based on fees, discounts and other factors

CREATE CANCEL Equivalent REST or COMMAND LINE

Overview
Help
Choose based on availability

Quickstart
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Cluster architecture
Help
Understand the architecture of your cluster

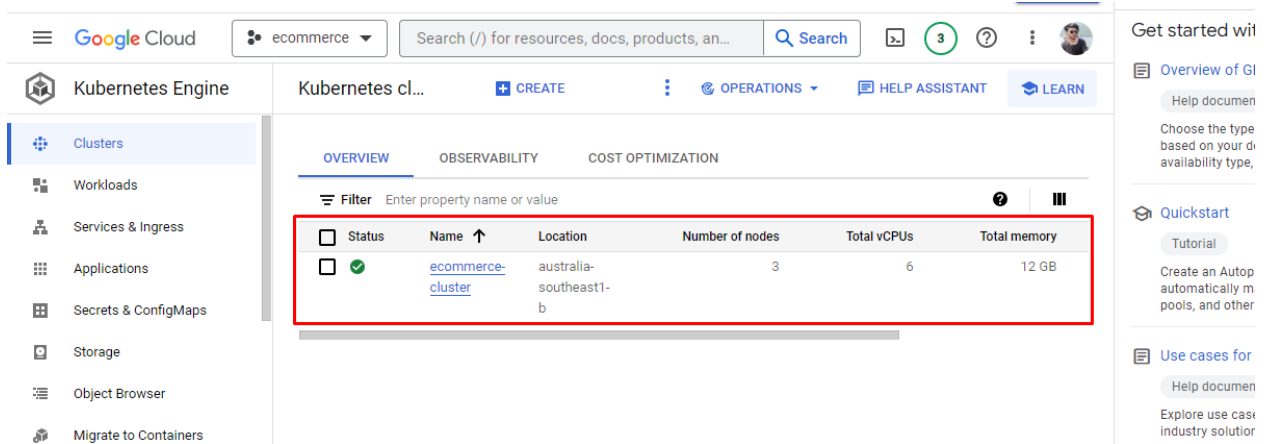
You can choose the specific version of Kubernetes. I have selected the default one. You can also configure the machine type, number of nodes, and other settings for the node pool. These settings determine the capacity and resources of your cluster. Depending on your needs, you might have options for configuring advanced settings, such as automatic scaling, node auto-repair, and node auto-upgrades.

Click “**Create**” once you finish filling the configuration details.

Step 4:

After few minutes, your cluster will be ready.

YAAHOO, Your cluster is ready.



The screenshot shows the Google Cloud console interface for the Kubernetes Engine. The left sidebar lists various services, with 'Kubernetes Engine' selected. The main panel displays the 'Kubernetes cl...' page, which includes a 'CREATE' button and tabs for 'OVERVIEW', 'OBSERVABILITY', and 'COST OPTIMIZATION'. A table lists the cluster details, with the first row highlighted by a red border. The table has columns for Status, Name, Location, Number of nodes, Total vCPUs, and Total memory.

Status	Name	Location	Number of nodes	Total vCPUs	Total memory
<input checked="" type="checkbox"/>	ecommerce-cluster	australia-southeast1-b	3	6	12 GB

You can see my cluster and its configuration details in the screenshot above.

Now we need to configure “Kubectl” which is a command-line tool for interacting with the Kubernetes cluster. Here’s how you can do it:

Step 1: Install “Kubectl”

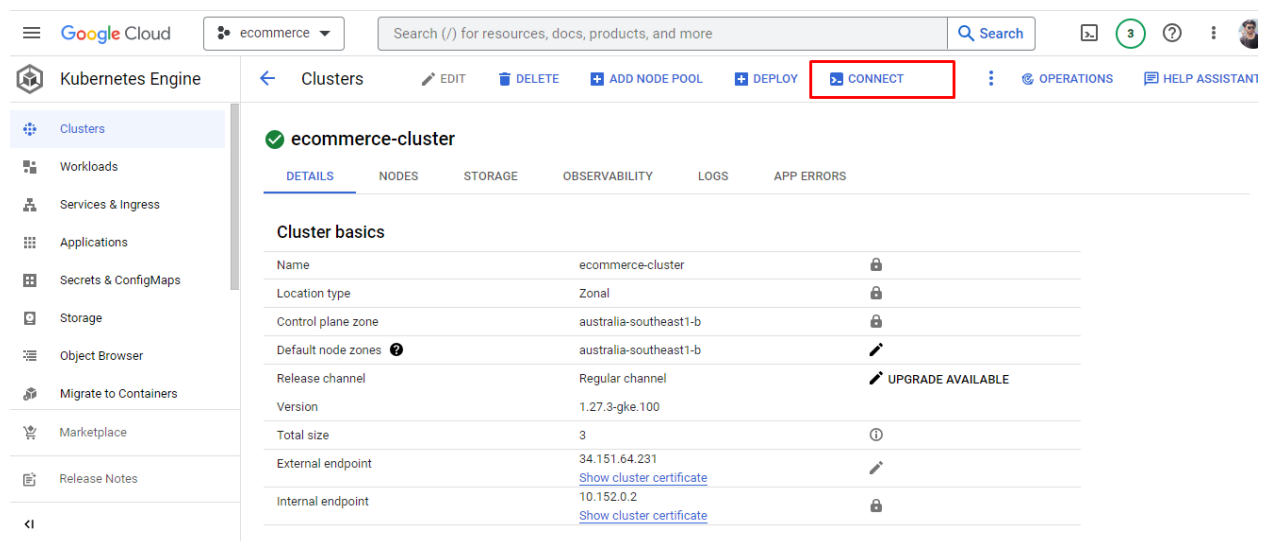
If you don't have kubectl installed already, you need to install it. The installation process can vary depending on your operating system. You can find installation instructions for various platforms here: <https://kubernetes.io/docs/tasks/tools/install-kubectl/>

Step 2: Authenticate Kubectl with GKE

After you install Kubectl in your system, you need to authenticate it with the GKE to interact with the clusters. To authenticate:

Log in to your Google Cloud Console.

- In the left navigation menu, go to "**Kubernetes Engine**" > "**Clusters.**"
- Find the cluster you created and click on its name to open its details.
- At the top of the cluster details page, there is a “**Connect button**”. Click on it.



- After clicking "**Connect**," you'll see a pop-up dialog with a command that you need to run in your local terminal. This command includes the necessary configuration for kubectl to connect to your GKE cluster.

Connect to the cluster

You can connect to your cluster via command-line or using a dashboard.

Command-line access

Configure [kubectl](#) command line access by running the following command:

```
$ gcloud container clusters get-credentials ecommerce-cluster --zone australia-southeast1-b --project ecommerce-397723
```

[RUN IN CLOUD SHELL](#)

Cloud Console dashboard

You can view the workloads running in your cluster in the Cloud Console [Workloads dashboard](#).

[OPEN WORKLOADS DASHBOARD](#)

Step 3:

Copy the command from the pop-up dialog and paste it into your terminal.

Step 4:

Once you run the command, your kubectl will be configured to work with your GKE cluster. You can verify this by running commands like:

kubectl get nodes

Now, we are ready to use Kubectl to manage and interact with our clusters.

NOTE: LINK TO MY PUBLIC GITHUB REPO IS <https://github.com/dahalapaar/isec6000-assignment1-task1>