Cloud Computing Applications and Services
(Aplicações e Serviços de Computação em Nuvem)

Google Kubernetes Engine

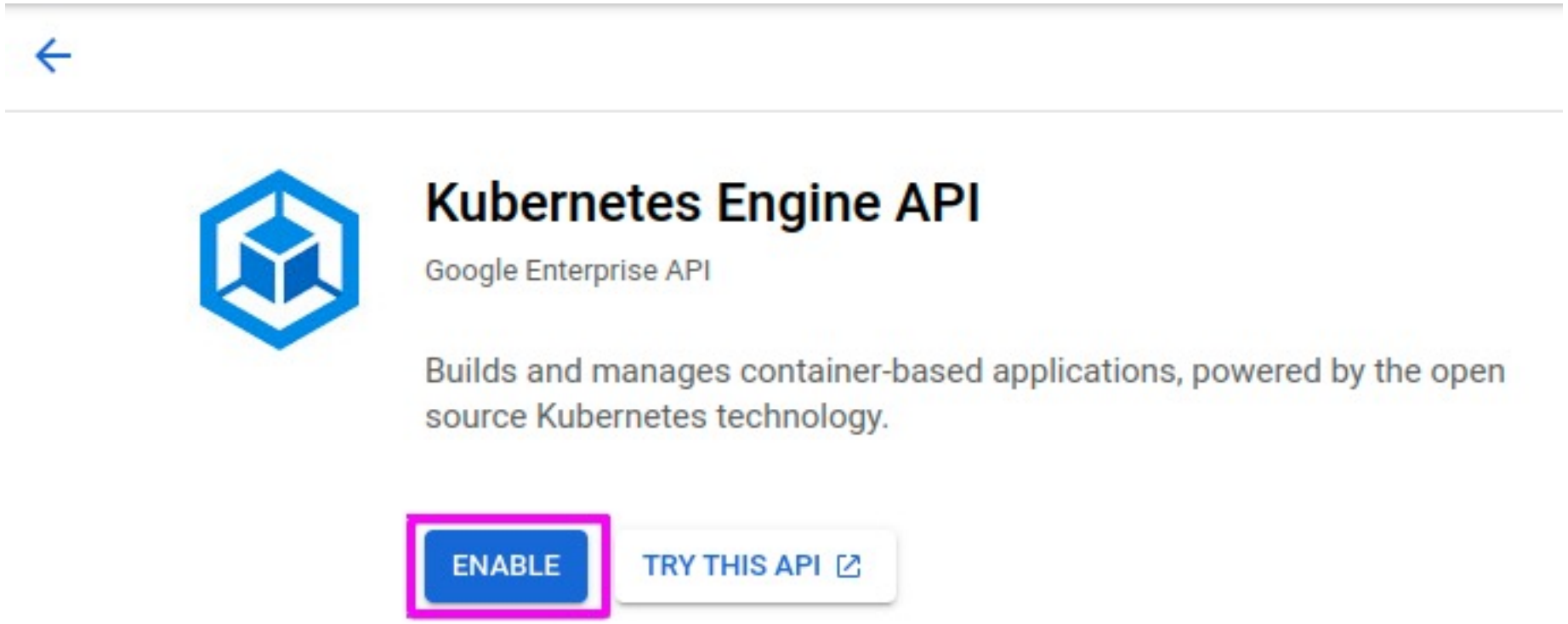
University of Minho
2023/2024

Bootstrap

- Create project
  - Associate billing account (check e-mail for coupon)
  - Each account has 50$

Enable Kubernetes Engine API

(Side Bar -> Kubernetes Engine -> Enable)



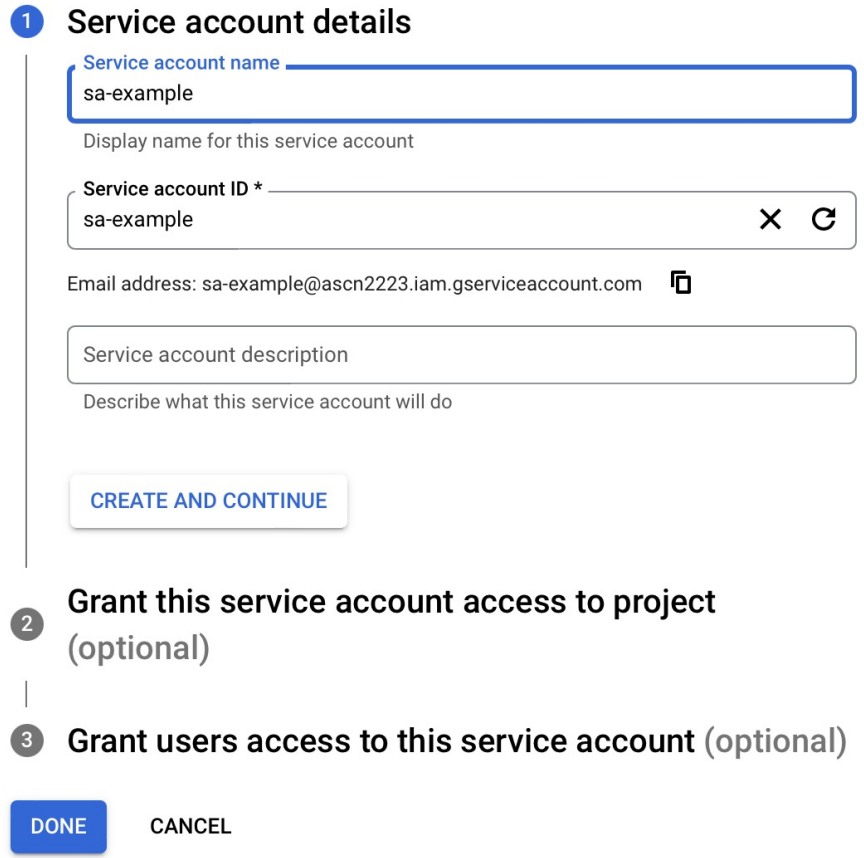
Create a Service Account

(Side Bar -> AIM & Admin -> Service accounts)

+ CREATE SERVICE ACCOUNT

1 Service account details

Fill the *Service account name* and click on "*Create and continue*"



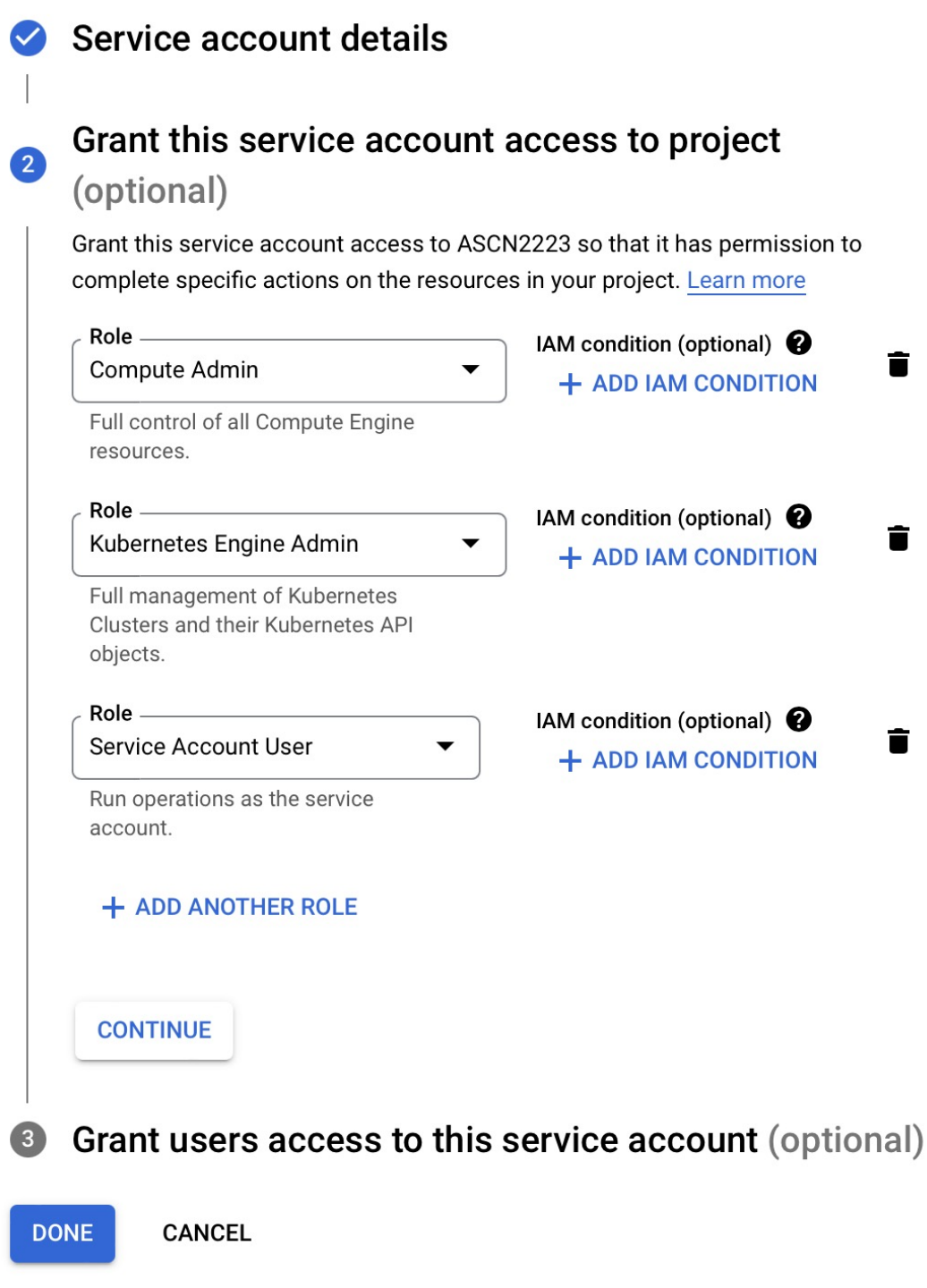
Create a Service Account

(Side Bar -> AIM & Admin -> Service accounts)

2 Grant this service account access to project

Grant the following Roles to the service account:

- Compute Admin
- Kubernetes Engine Admin
- Service Account User

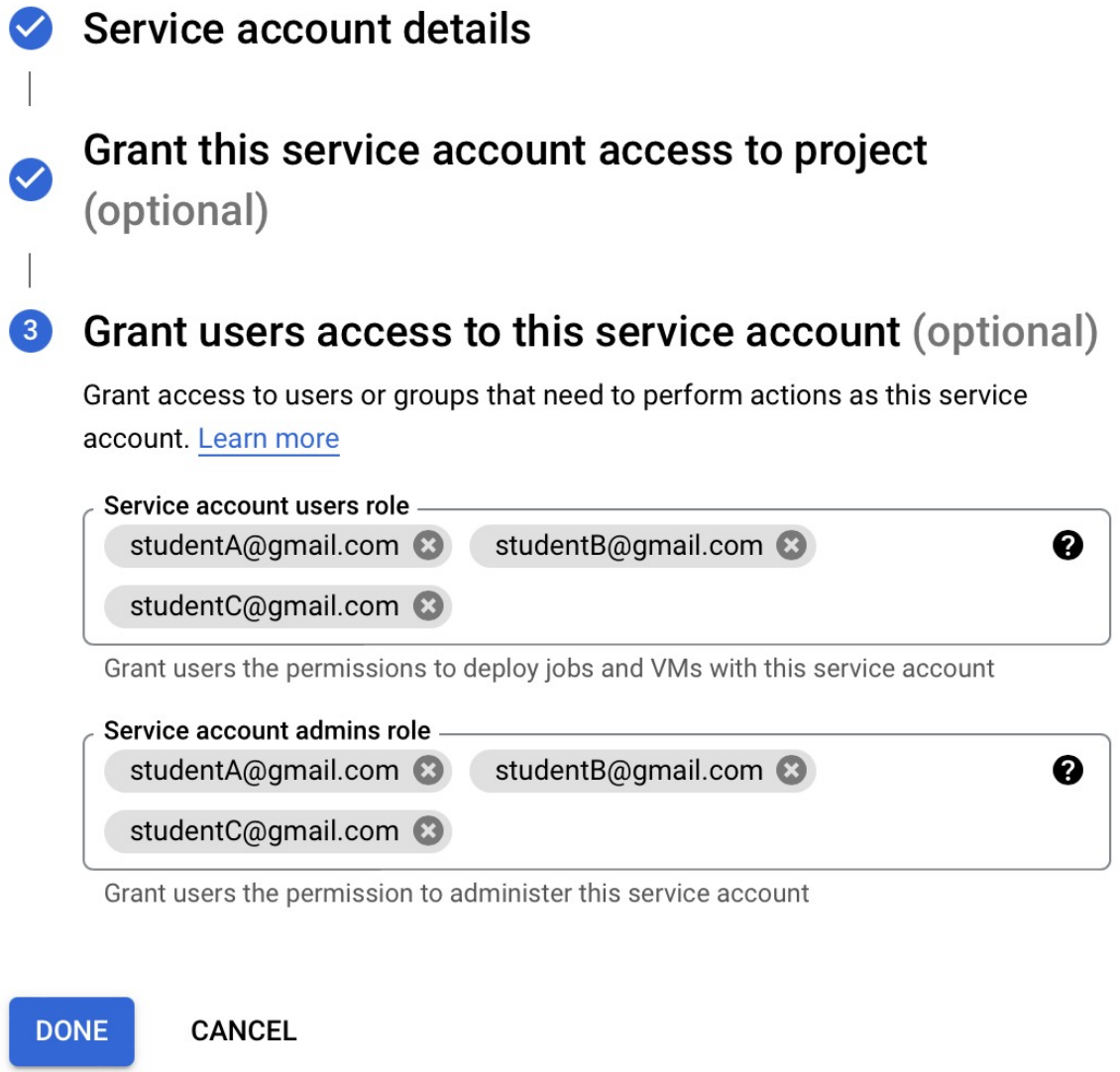


Create a Service Account

(Side Bar -> AIM & Admin -> Service accounts)

3 Grant users access to this service account

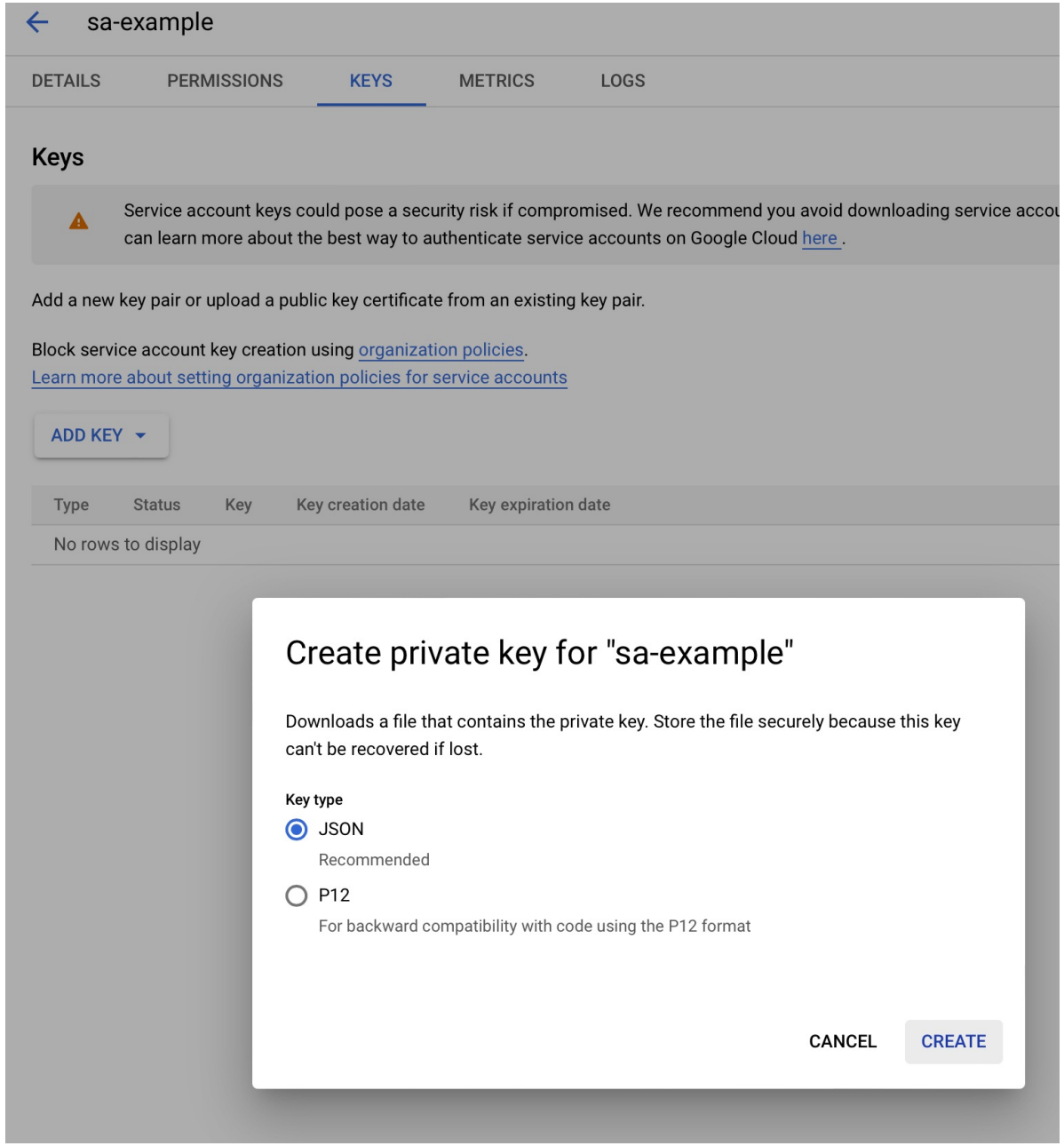
Add the group elements emails to both "*Service account users role*" and "*Service account admins role*"



Get Service Account Keys

(Side Bar -> AIM & Admin -> Service accounts)

1. Select your service account
2. On top select “KEYS”
3. Select “ADD KEY” -> “Create new key”
4. Select “JSON” -> “CREATE”



Note: The downloaded file should be used as the credential file needed by the GKE_cluster_create playbook.

Important: This file has private credentials and cannot be added to your project’s public github repository!

Install and Configure Google Cloud CLI

- The Google Cloud CLI must be installed and configured on the machine where the Ansible playbooks will run.

- Access the link https://cloud.google.com/sdk/docs/install and follow the installation instructions for the corresponding operating systems.

- Configure the Google Cloud CLI with the following command:

```
gcloud init
```

GKE Kubernetes Cluster

- Kubernetes cluster resources (e.g., master and worker nodes) are managed by Google
- GKE has access to other google services (e.g., load balancing, storage, monitoring, …)
- Users can interact directly with the cluster through the **gcloud CLI** tool (e.g., create, configure, destroy cluster)
- **gcloud CLI** installs and configures **kubectl** so that users can deploy K8s objects at the GKE cluster (e.g., pods, services, …)
- Ansible **gcp_container_cluster** module can be used to interact with **gcloud CLI**