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)





Kubernetes Engine API

Google Enterprise API

Builds and manages container-based applications, powered by the open source Kubernetes technology.



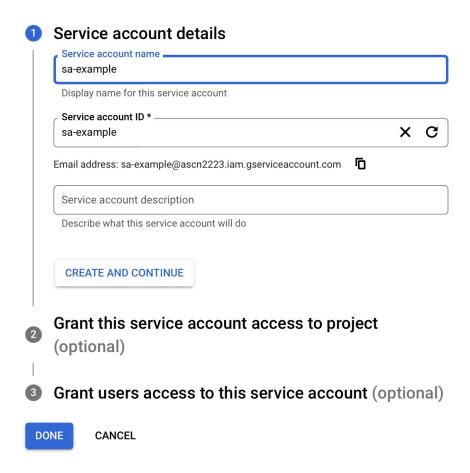
Create a Service Account

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

+ CREATE SERVICE ACCOUNT

1 Service account details

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



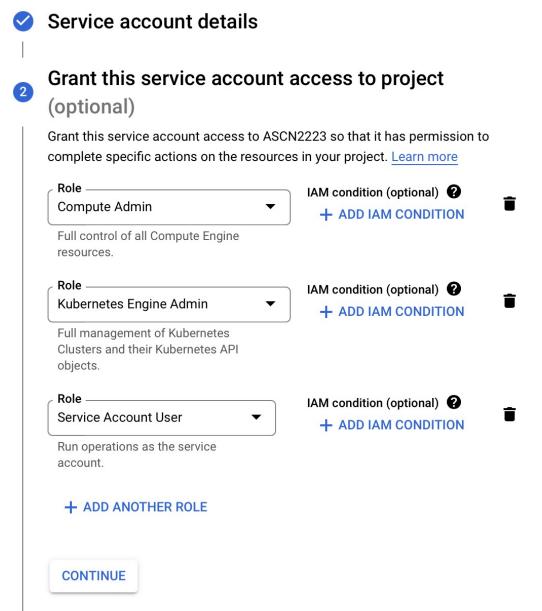
Create a Service Account

(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



Grant users access to this service account (optional)



CANCEL

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"

Service account details Grant this service account access to project (optional) Grant users access to this service account (optional) Grant access to users or groups that need to perform actions as this service account. Learn more Service account users role studentA@gmail.com studentB@gmail.com 🕄 studentC@gmail.com Grant users the permissions to deploy jobs and VMs with this service account Service account admins role studentA@gmail.com studentB@gmail.com 😢 studentC@gmail.com

Grant users the permission to administer this service account

DONE

CANCEL

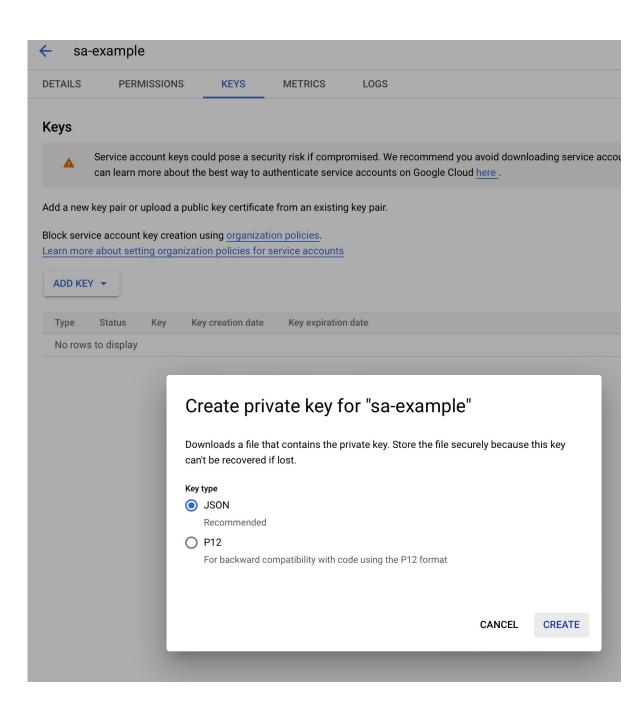
Get Service Account Keys

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

- 1 Select your service account
- 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

