Alaa ismail

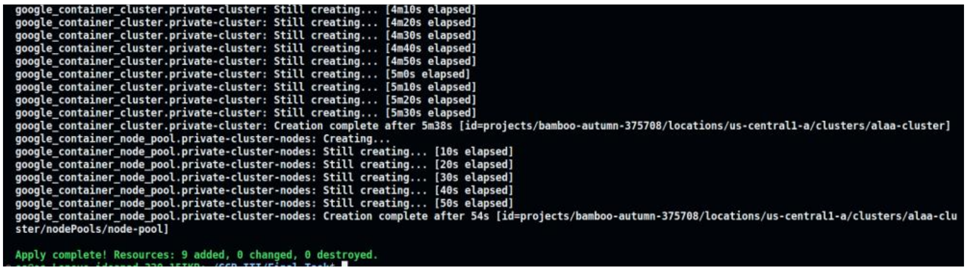
DevOps track Cu

1)create a vpc with 2 subnets

-mangment subnet has private vm and natgatway

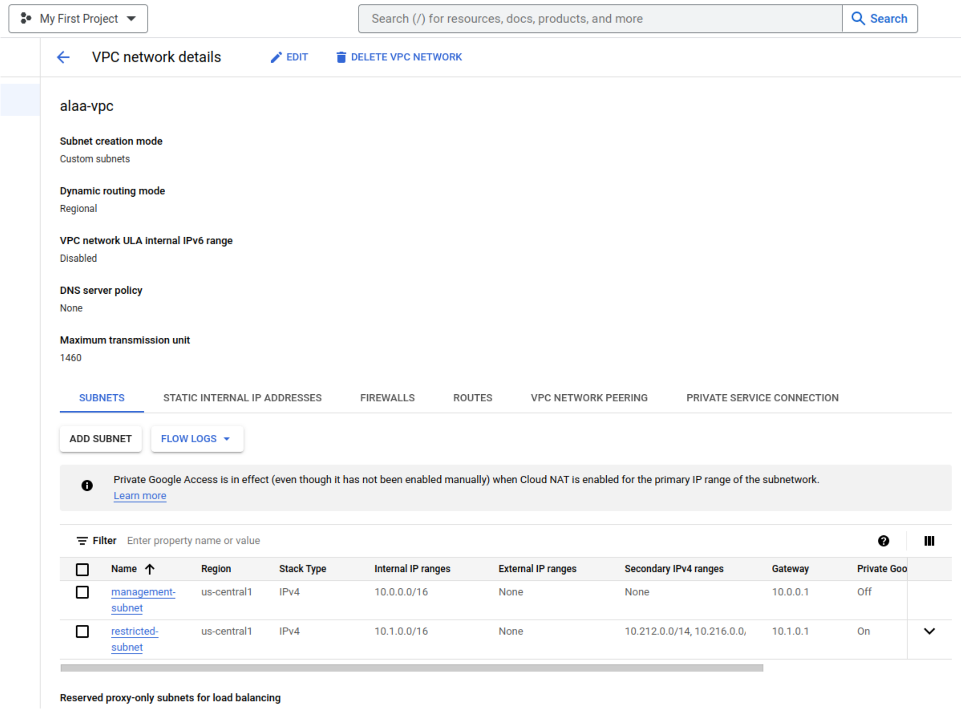
-restricted-subnet has a private gke cluster

After creating this rescources using terraform as attached:



```
google_container_cluster.private-cluster: Still creating... [4m10s elapsed]
google_container_cluster.private-cluster: Still creating... [4m20s elapsed]
google_container_cluster.private-cluster: Still creating... [4m30s elapsed]
google_container_cluster.private-cluster: Still creating... [4m40s elapsed]
google_container_cluster.private-cluster: Still creating... [4m50s elapsed]
google_container_cluster.private-cluster: Still creating... [5m0s elapsed]
google_container_cluster.private-cluster: Still creating... [5m10s elapsed]
google_container_cluster.private-cluster: Still creating... [5m20s elapsed]
google_container_cluster.private-cluster: Still creating... [5m30s elapsed]
google_container_cluster.private-cluster: Creation complete after 5m38s [id=projects/bamboo-autumn-375708/locations/us-central1-a/clusters/alaa-cluster]
google_container_node_pool.private-cluster-nodes: Creating...
google_container_node_pool.private-cluster-nodes: Still creating... [10s elapsed]
google_container_node_pool.private-cluster-nodes: Still creating... [20s elapsed]
google_container_node_pool.private-cluster-nodes: Still creating... [30s elapsed]
google_container_node_pool.private-cluster-nodes: Still creating... [40s elapsed]
google_container_node_pool.private-cluster-nodes: Still creating... [50s elapsed]
google_container_node_pool.private-cluster-nodes: Creation complete after 54s [id=projects/bamboo-autumn-375708/locations/us-central1-a/clusters/alaa-clu
ster/nodePools/node-pool]

Apply complete! Resources: 9 added, 0 changed, 0 destroyed.
```

First: vpc with 2 subnets


My First Project
Search (/) for resources, docs, products, and more
Search
EDIT
DELETE VPC NETWORK

VPC network details

alaa-vpc

Subnet creation mode
Custom subnets

Dynamic routing mode
Regional

VPC network ULA internal IPv6 range
Disabled

DNS server policy
None

Maximum transmission unit
1460

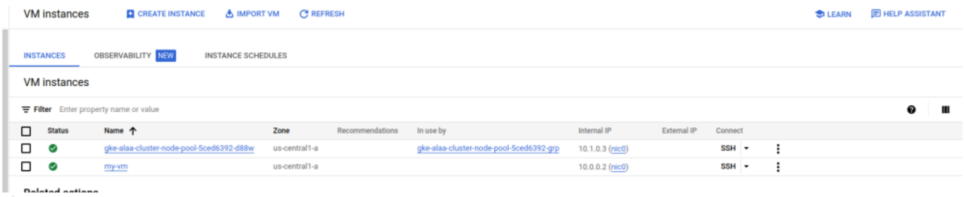
SUBNETS
STATIC INTERNAL IP ADDRESSES
FIREWALLS
ROUTES
VPC NETWORK PEERING
PRIVATE SERVICE CONNECTION
ADD SUBNET
FLOW LOGS
Filter
Enter property name or value

Private Google Access is in effect (even though it has not been enabled manually) when Cloud NAT is enabled for the primary IP range of the subnetwork. Learn more

□	Name ↑	Region	Stack Type	Internal IP ranges	External IP ranges	Secondary IPv4 ranges	Gateway	Private Goo
□	management-subnet	us-central1	IPv4	10.0.0.0/16	None	None	10.0.0.1	Off
□	restricted-subnet	us-central1	IPv4	10.1.0.0/16	None	10.212.0.0/14, 10.216.0.0,	10.1.0.1	On

Reserved proxy-only subnets for load balancing

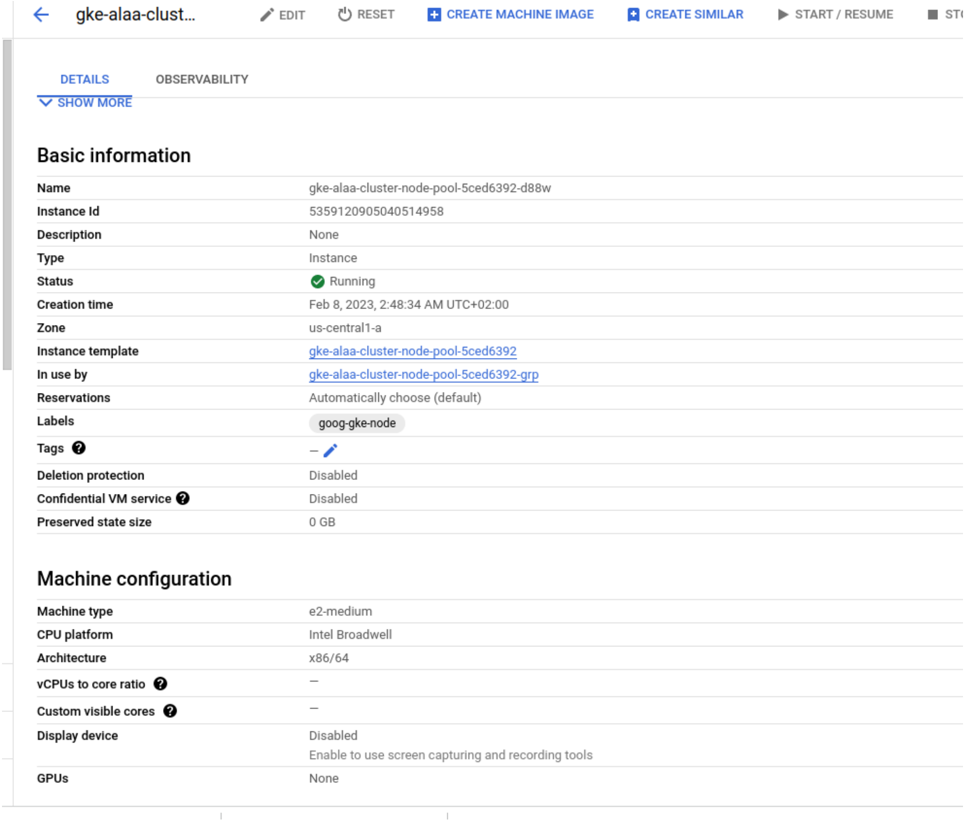
Second: private cluster and the private vm



VM instances

Filter Enter property name or value

□	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
□	✓	gke-alaa-cluster-node-pool-5ced6392-d88w	us-central1-a		gke-alaa-cluster-node-pool-5ced6392-grp	10.1.0.3 (nic0)		SSH
□	✓	my-vm	us-central1-a			10.0.0.2 (nic0)		SSH



Basic information

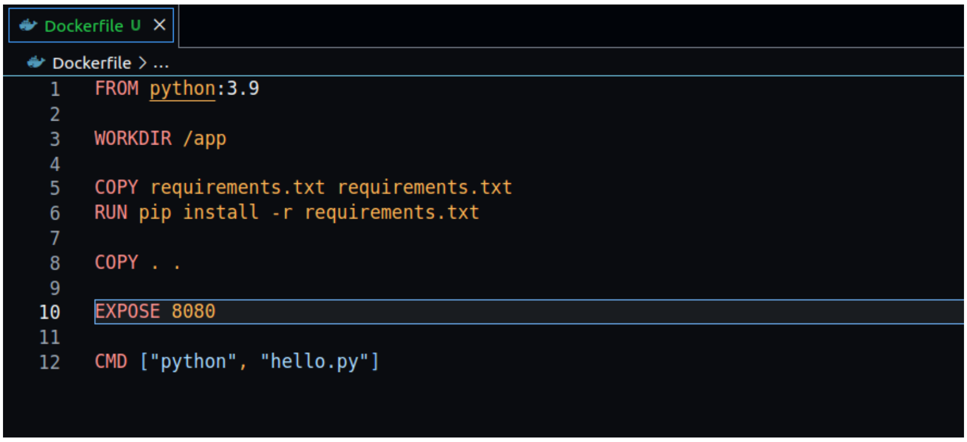
Name	gke-alaa-cluster-node-pool-5ced6392-d88w
Instance Id	5359120905040514958
Description	None
Type	Instance
Status	✓ Running
Creation time	Feb 8, 2023, 2:48:34 AM UTC+02:00
Zone	us-central1-a
Instance template	gke-alaa-cluster-node-pool-5ced6392
In use by	gke-alaa-cluster-node-pool-5ced6392-grp
Reservations	Automatically choose (default)
Labels	goog-gke-node
Tags ?	–
Deletion protection	Disabled
Confidential VM service ?	Disabled
Preserved state size	0 GB

Machine configuration

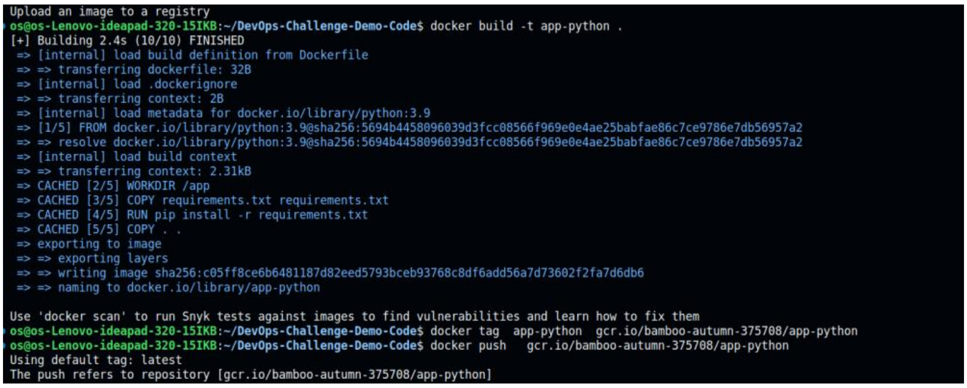
Machine type	e2-medium
CPU platform	Intel Broadwell
Architecture	x86/64
vCPUs to core ratio ?	–
Custom visible cores ?	–
Display device	Disabled Enable to use screen capturing and recording tools
GPUs	None

2)clone the following rebo and create a docker file ,then build image my-img

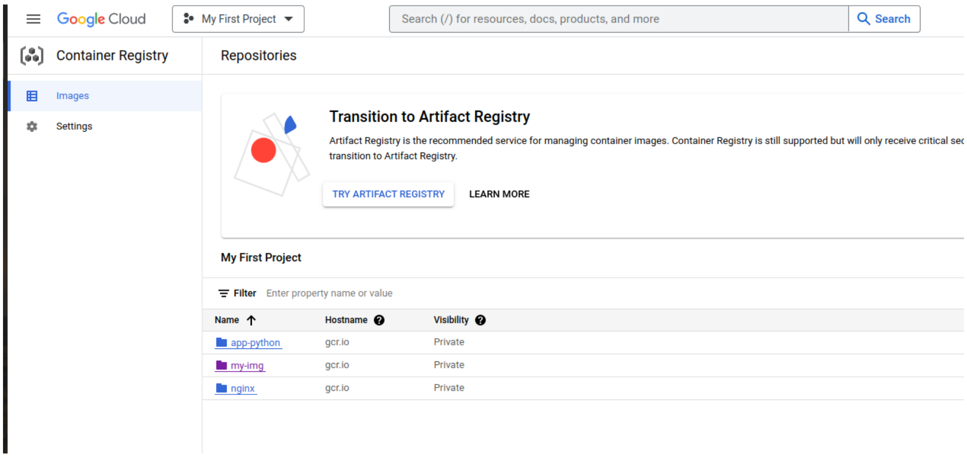
Then give the image tag and push it to gcr



```
FROM python:3.9

WORKDIR /app

COPY requirements.txt requirements.txt
RUN pip install -r requirements.txt

COPY . .

EXPOSE 8080

CMD ["python", "hello.py"]
```



```
Upload an image to a registry
os@os-Lenovo-ideapad-320-15IKB:~/DevOps-Challenge-Demo-Code$ docker build -t app-python .
[+] Building 2.4s (10/10) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 32B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/python:3.9
 => [1/5] FROM docker.io/library/python:3.9@sha256:5694b4458096039d3fcc08566f969e0e4ae25babfae86c7ce9786e7db56957a2
 => => resolve docker.io/library/python:3.9@sha256:5694b4458096039d3fcc08566f969e0e4ae25babfae86c7ce9786e7db56957a2
 => [internal] load build context
 => => transferring context: 2.31kB
 => CACHED [2/5] WORKDIR /app
 => CACHED [3/5] COPY requirements.txt requirements.txt
 => CACHED [4/5] RUN pip install -r requirements.txt
 => CACHED [5/5] COPY . .
 => exporting to image
 => => exporting layers
 => => writing image sha256:c05ff8ce6b6481187d82eed5793bceb93768c8df6add56a7d73602f2fa7d6db6
 => => naming to docker.io/library/app-python

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
os@os-Lenovo-ideapad-320-15IKB:~/DevOps-Challenge-Demo-Code$ docker tag  app-python  gcr.io/bamboo-autumn-375708/app-python
os@os-Lenovo-ideapad-320-15IKB:~/DevOps-Challenge-Demo-Code$ docker push   gcr.io/bamboo-autumn-375708/app-python
Using default tag: latest
The push refers to repository [gcr.io/bamboo-autumn-375708/app-python]
```



Repositories

Transition to Artifact Registry

Artifact Registry is the recommended service for managing container images. Container Registry is still supported but will only receive critical sec transition to Artifact Registry.

TRY ARTIFACT REGISTRY   LEARN MORE

My First Project

Filter Enter property name or value

Name ↑	Hostname	Visibility
app-python	gcr.io	Private
my-img	gcr.io	Private
nginx	gcr.io	Private

3)connect to the private instance and create your deployment (my-dep) from your image (my-img)

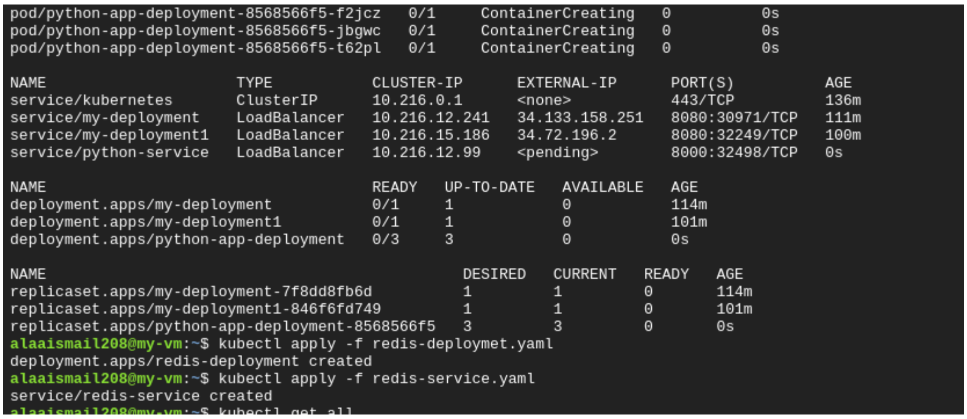
gcloud auth login

gcloud container clusters get-credentials k8s-cluster --zone us-central1-a --project shrouk-iti

sudo apt-get install google-cloud-sdk-gke-gcloud-auth-plugin

gcloud components install kubectl

4)create loadbalancer service to access your private cluster



```
pod/python-app-deployment-8568566f5-f2jcz   0/1     ContainerCreating   0          0s
pod/python-app-deployment-8568566f5-jbgwc   0/1     ContainerCreating   0          0s
pod/python-app-deployment-8568566f5-t62pl   0/1     ContainerCreating   0          0s

NAME                         TYPE           CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/kubernetes           ClusterIP      10.216.0.1      <none>           443/TCP          136m
service/my-deployment        LoadBalancer   10.216.12.241   34.133.158.251   8080:30971/TCP   111m
service/my-deployment1       LoadBalancer   10.216.15.186   34.72.196.2      8080:32249/TCP   100m
service/python-service       LoadBalancer   10.216.12.99    <pending>        8000:32498/TCP   0s

NAME                                    READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/my-deployment           0/1     1            0           114m
deployment.apps/my-deployment1          0/1     1            0           101m
deployment.apps/python-app-deployment   0/3     3            0           0s

NAME                                              DESIRED   CURRENT   READY   AGE
replicaset.apps/my-deployment-7f8dd8fb6d          1         1         0       114m
replicaset.apps/my-deployment1-846f6fd749         1         1         0       101m
replicaset.apps/python-app-deployment-8568566f5   3         3         0       0s
alaaismail208@my-vm:~$ kubectl apply -f redis-deploymet.yaml
deployment.apps/redis-deployment created
alaaismail208@my-vm:~$ kubectl apply -f redis-service.yaml
service/redis-service created
alaaismail208@my-vm:~$ kubectl get all
```