Desafio #8

Objetivo:

El siguiente desafío tiene como objetivo poner en práctica como desplegar una aplicación y los servicios necesarios en un entorno de kubernetes, en este desafío vamos a conectar todo lo realizado en el desafío anterior con Kubernetes.

Escenario:

Luego del trabajo realizado en el sprint anterior y por el aporte que realizamos para mejorar la experiencia de desarrollo nuestro equipo nos encargó, transformar los servicios de docker-compose en un manifiesto de kubernetes, para eso debemos contemplar realizar el deployment de la misma aplicación y hacer que esta se conecte con su propia base de datos.

La aplicación que va a ser manejada por este proceso se encuentra en el siguiente enlace:

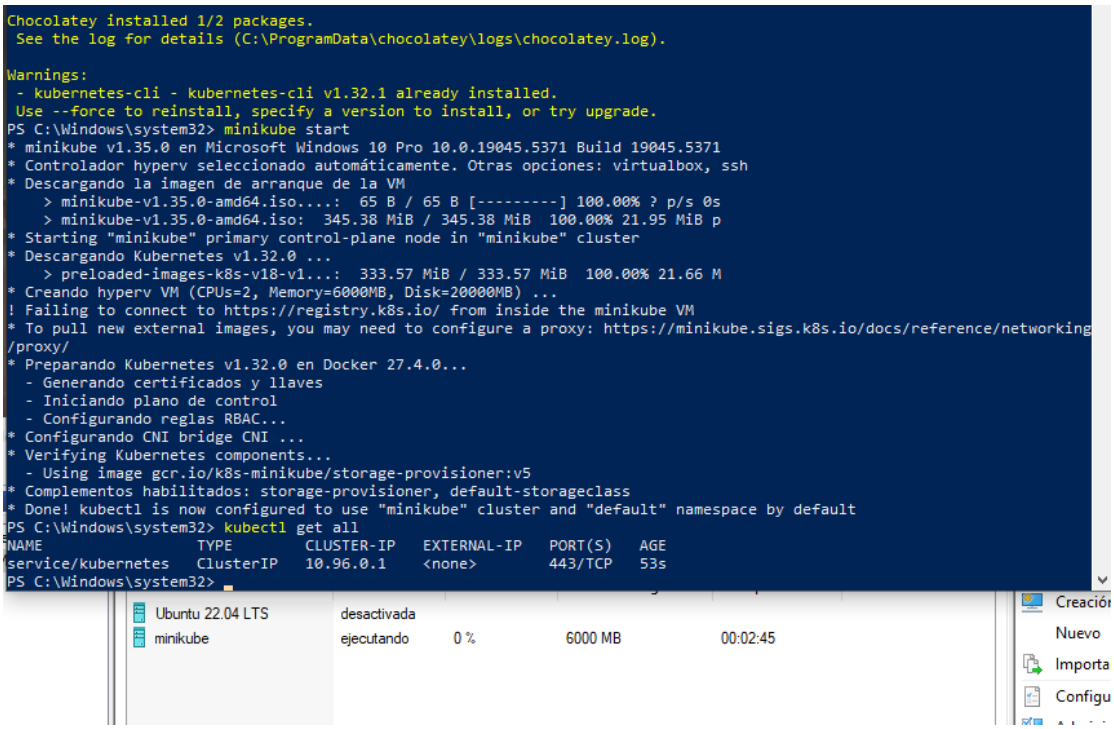
https://github.com/yosoyfunes/app-template-nestjs

Requisitos:

1. Elaborar los manifiestos necesarios para desplegar la aplicación vista en el desafío #5.
2. Elaborar toda la documentación necesaria.

En este desafio, en base a que tuve inconvenientes con WSL2 y Minikube, tuve que utilizar Windows y Docker Desktop,

Inicio minikube start lo cuál me genera una VM en HyperV



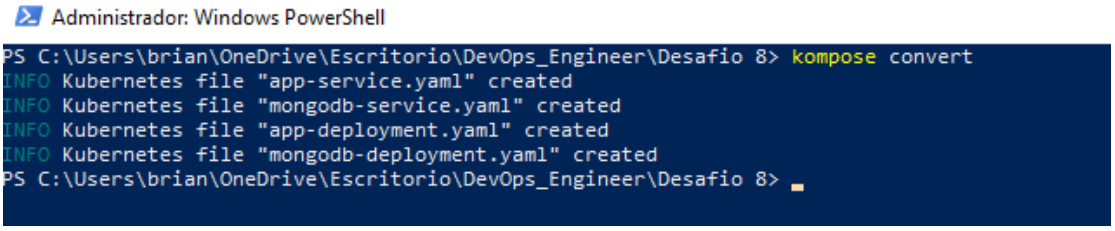
Instalamos Kubernetes Kompose

$ choco install kubernetes-kompose

```
PS C:\Windows\system32> choco install kubernetes-kompose
Chocolatey v2.3.0
3 validations performed. 2 success(es), 1 warning(s), and 0 error(s).

Validation Warnings:
 - A pending system reboot request has been detected, however, this is
   being ignored due to the current Chocolatey configuration.  If you
   want to halt when this occurs, then either set the global feature
   using:
     choco feature enable --name="exitOnRebootDetected"
   or pass the option --exit-when-reboot-detected.

Installing the following packages:
kubernetes-kompose
By installing, you accept licenses for the packages.
Downloading package from source 'https://community.chocolatey.org/api/v2/'
Progress: Downloading kubernetes-kompose 1.35.0... 100%

kubernetes-kompose v1.35.0 [Approved]
kubernetes-kompose package files install completed. Performing other installation steps.
 ShimGen has successfully created a shim for kompose.exe
 The install of kubernetes-kompose was successful.
  Deployed to 'C:\ProgramData\chocolatey\lib\kubernetes-kompose'

Chocolatey installed 1/1 packages.
 See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).
PS C:\Windows\system32>
```

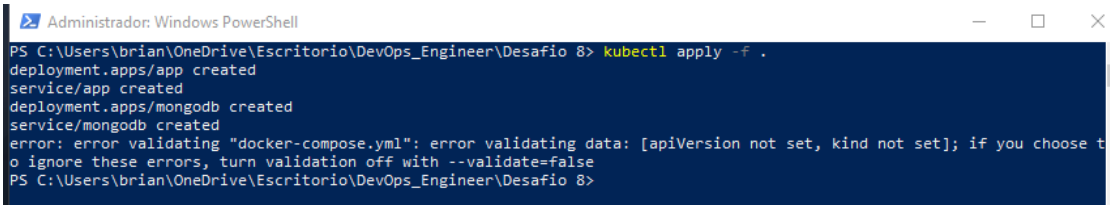
Nos movemos al directorio de trabajo, una vez colocados los archivos del desafio 5, utilizamos el siguiente comando;

$ kompose convert



Aplico manifiestos a minikube:

$ kubectl apply -f .



Error; Da error al subir docker-compose.yml

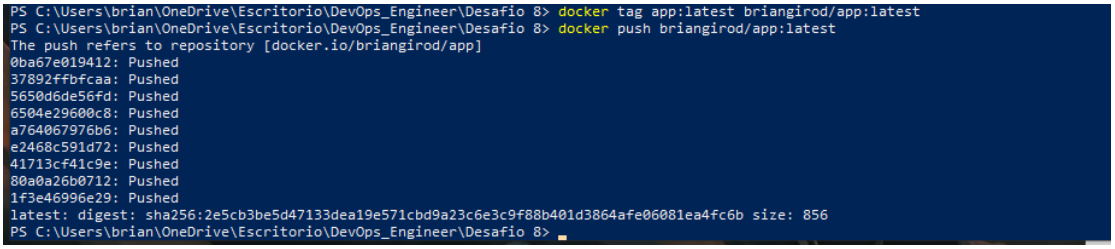
**Kubernetes no realiza automaticamente el proceso de Build, como si lo hace Docker Compose.*

Solución; Desplegamos buildeamos a Docker Hub y configuramos docker-compose.yml

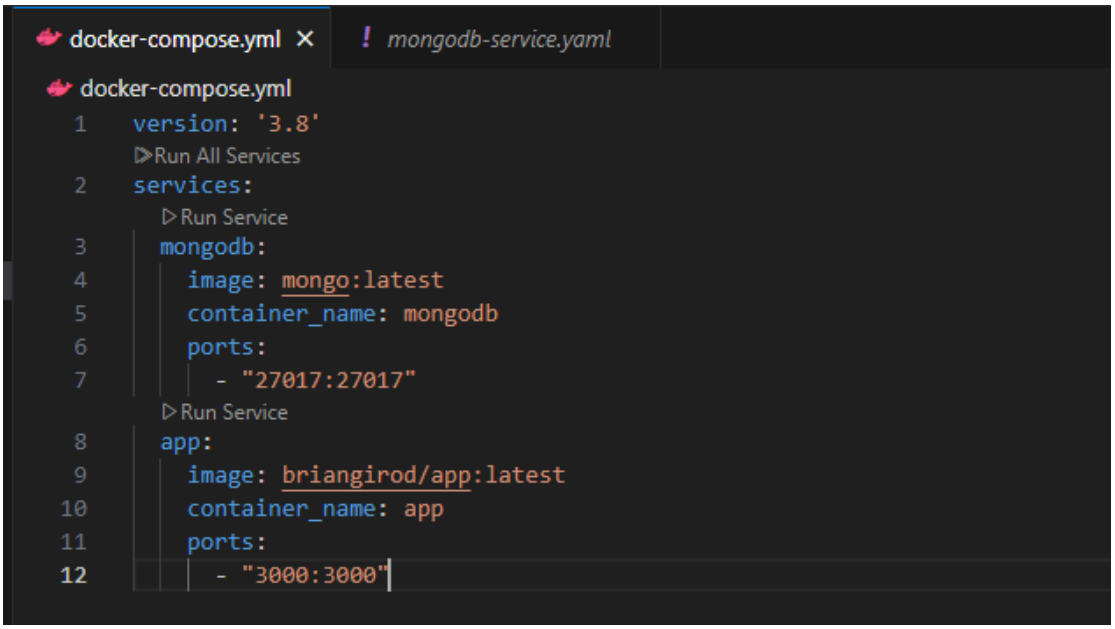
Comandos a utilizar;

$ docker tag app:latest briangirod/app:latest

$ docker push briangirod/app:latest



Realizamos cambios en docker-compose.yml para apuntar al Docker Hub



Aplicamos los cambios nuevamente;

$ kubectl apply -f .

y ejecutamos el siguiente comando para verificar que esté corriendo;

$ kubectl get all

Funcionando;

```
PS C:\Users\brian\OneDrive\Escritorio\DevOps_Engineer\Desafio 8> kubectl get all
NAME                          READY   STATUS    RESTARTS   AGE
pod/app-666dcdbd45-96v96      1/1     Running   0          4m59s
pod/mongodb-7b7ff49bcd-x222d  1/1     Running   0          4m59s

NAME                 TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)     AGE
service/app          ClusterIP   10.101.94.100    <none>        3000/TCP    23m
service/kubernetes   ClusterIP   10.96.0.1        <none>        443/TCP     32m
service/mongodb      ClusterIP   10.107.229.240   <none>        27017/TCP   23m

NAME                     READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/app      1/1     1            1           23m
deployment.apps/mongodb  1/1     1            1           23m

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/app-666dcdbd45      1         1         1       4m59s
replicaset.apps/app-696d566f86      0         0         0       23m
replicaset.apps/app-788c98bbcd      0         0         0       18m
replicaset.apps/mongodb-5b568ccc58  0         0         0       18m
replicaset.apps/mongodb-7b7ff49bcd  1         1         1       23m
PS C:\Users\brian\OneDrive\Escritorio\DevOps_Engineer\Desafio 8> kubectl port-forward service/app 3000:3000
Forwarding from 127.0.0.1:3000 -> 3000
Forwarding from [::1]:3000 -> 3000
Handling connection for 3000
Handling connection for 3000
```

Ingresamos a la base de datos con los siguientes comandos;

$ kubectl run -it --rm --image=mongo:latest mongo-client -- bash

y dentro de mongo-client;

$ mongosh mongodb://mongodb:27017

Mongodb

```
PS C:\Windows\system32> kubectl run -it --rm --image=mongo:latest mongo-client -- bash
If you don't see a command prompt, try pressing enter.
root@mongo-client:/# mongo mongodb://mongodb:27017
bash: mongo: command not found
root@mongo-client:/# mongosh mongodb://mongodb:27017
Current Mongosh Log ID: 67a668e16c0c38bcde544ca6
Connecting to:          mongodb://mongodb:27017/?directConnection=true&appName=mongosh+2.3.8
Using MongoDB:          8.0.4
Using Mongosh:          2.3.8

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/


To help improve our products, anonymous usage data is collected and sent to MongoDB periodically (https://www.mongodb.co
m/legal/privacy-policy).
You can opt-out by running the disableTelemetry() command.

------
   The server generated these startup warnings when booting
   2025-02-07T20:03:51.669+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. S
ee http://dochub.mongodb.org/core/prodnotes-filesystem
   2025-02-07T20:03:52.828+00:00: Access control is not enabled for the database. Read and write access to data and conf
iguration is unrestricted
   2025-02-07T20:03:52.828+00:00: For customers running the current memory allocator, we suggest changing the contents o
f the following sysfsFile
   2025-02-07T20:03:52.828+00:00: For customers running the current memory allocator, we suggest changing the contents o
f the following sysfsFile
   2025-02-07T20:03:52.828+00:00: We suggest setting the contents of sysfsFile to 0.
   2025-02-07T20:03:52.828+00:00: Your system has glibc support for rseq built in, which is not yet supported by tcmallo
c-google and has critical performance implications. Please set the environment variable GLIBC_TUNABLES=glibc.pthread.rse
q=0
   2025-02-07T20:03:52.828+00:00: vm.max_map_count is too low
------

test>
```

Y por último, ingreso al pod y realizo una solicitud http a la DB para comprobar la comunicación con el servicio

$ kubectl exec -it pod/app-666dcdbd45-96v96 -- /bin/sh

y realizo una petición HTTP a la DB

Pruebo con curl pero la misma no estaba instalado, pruebo con wget;

$ wget -qO- 10.107.229.240:27017

Administrador: Windows PowerShell

```
PS C:\Windows\system32> kubectl get all
NAME                          READY   STATUS    RESTARTS   AGE
pod/app-666dcdbd45-96v96      1/1     Running   0          11m
pod/mongodb-7b7ff49bcd-x222d  1/1     Running   0          11m

NAME                 TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)     AGE
service/app          ClusterIP   10.101.94.100    <none>        3000/TCP    29m
service/kubernetes   ClusterIP   10.96.0.1        <none>        443/TCP     38m
service/mongodb      ClusterIP   10.107.229.240   <none>        27017/TCP   29m

NAME                     READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/app      1/1     1            1           29m
deployment.apps/mongodb  1/1     1            1           29m

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/app-666dcdbd45      1         1         1       11m
replicaset.apps/app-696d566f86      0         0         0       29m
replicaset.apps/app-788c98bbcd      0         0         0       24m
replicaset.apps/mongodb-5b568ccc58  0         0         0       24m
replicaset.apps/mongodb-7b7ff49bcd  1         1         1       29m
PS C:\Windows\system32> kubectl exec -it pod/app-666dcdbd45-96v96 -- /bin/sh
/app # curl 10.107.229.240:27017
/bin/sh: curl: not found
/app # wget -qO- 10.107.229.240:27017
It looks like you are trying to access MongoDB over HTTP on the native driver port.
/app #
```