

# PROJET DEVOPS

Installation et configuration de Docker et Kubernetes sur Debian

```
root@Debian:~# sudo apt update && sudo apt upgrade -y
Atteint :1 http://deb.debian.org/debian bookworm InRelease
Atteint :2 http://deb.debian.org/debian bookworm-updates InRelease
Atteint :3 http://repo.mysql.com/apt/debian bookworm InRelease
Atteint :4 http://security.debian.org/debian-security bookworm-security InRelease

root@Debian:~# sudo apt install -y ca-certificates curl gnupg
sudo install -m 0755 -d /etc/apt/keyrings
curl -fsSL https://download.docker.com/linux/debian/gpg | sudo tee /etc/apt/keyrings/docker.gpg > /dev/null
echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/debian $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
Lecture des listes de paquets... Fait
Construction de l'arbre des dépendances... Fait
Lecture des informations d'état... Fait
ca-certificates est déjà la version la plus récente (20230311).
curl est déjà la version la plus récente (7.88.1-10+deb12u12).
gnupg est déjà la version la plus récente (2.2.40-1.1).
gnupg passé en « installé manuellement ».
Les paquets suivants ont été installés automatiquement et ne sont plus nécessaires :
  libdaxctl1 libdbus-glib-1-2 libndctl6 libpmem1 linux-image-6.1.0-25-amd64
Veuillez utiliser « sudo apt autoremove » pour les supprimer.
0 mis à jour, 0 nouvellement installés, 0 à enlever et 0 non mis à jour.
root@Debian:~# ^C
root@Debian:~# █
```

```
root@Debian:~# sudo apt update && sudo apt install -y docker-ce docker-ce-cli containerd.io
Atteint :1 http://deb.debian.org/debian bookworm InRelease
Atteint :2 http://repo.mysql.com/apt/debian bookworm InRelease
Atteint :3 http://deb.debian.org/debian bookworm-updates InRelease
Atteint :4 http://security.debian.org/debian-security bookworm-security InRelease
Atteint :5 https://download.docker.com/linux/debian bookworm InRelease
Atteint :6 https://apt.releases.hashicorp.com bookworm InRelease
Atteint :7 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.30/deb InRelease
Err :5 https://download.docker.com/linux/debian bookworm InRelease
  Les signatures suivantes n'ont pas pu être vérifiées car la clé publique n'est pas disponible : NO_PUBKEY 7EA0A9C3F273FCD8
Lecture des listes de paquets... Fait
Construction de l'arbre des dépendances... Fait
Lecture des informations d'état... Fait
Tous les paquets sont à jour.
```

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```
root@Debian:~# sudo systemctl start docker
sudo systemctl enable docker
sudo docker run hello-world
Synchronizing state of docker.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable docker
```

```
Hello from Docker!
This message shows that your installation appears to be working correctly.
```

To generate this message, Docker took the following steps:

1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.

(amd64)

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## Installation de Kubernetes sur Debian

```
root@Debian:~# curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.30/deb/Release.key | sudo gpg --dearmor -o /usr/share/keyrings/kubernetes-archive-keyring.gpg
echo "deb [signed-by=/usr/share/keyrings/kubernetes-archive-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.30/deb/ /" | sudo tee /etc/apt/sources.list.d/kubernetes.list
Le fichier « /usr/share/keyrings/kubernetes-archive-keyring.gpg » existe. Faut-il réécrire par-dessus ? (o/N) o
deb [signed-by=/usr/share/keyrings/kubernetes-archive-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.30/deb/ /
root@Debian:~# █
```

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```
root@Debian:~# sudo apt update
sudo apt install -y kubelet kubeadm kubectl
Atteint :1 http://security.debian.org/debian-security bookworm-security InRelease
Atteint :2 http://deb.debian.org/debian bookworm InRelease
Atteint :3 http://deb.debian.org/debian bookworm-updates InRelease
Atteint :4 http://repo.mysql.com/apt/debian bookworm InRelease
Atteint :5 https://apt.releases.hashicorp.com bookworm InRelease
Atteint :6 https://download.docker.com/linux/debian bookworm InRelease
Atteint :7 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.30/deb InRelease
Err :6 https://download.docker.com/linux/debian bookworm InRelease
  Les signatures suivantes n'ont pas pu être vérifiées car la clé publique n'est
  pas disponible : NO_PUBKEY 7EA0A9C3F273FCD8
Lecture des listes de paquets... Fait
Construction de l'arbre des dépendances... Fait
```

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```
root@Debian:~# sudo systemctl enable --now kubelet
root@Debian:~#
```

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```
root@Debian:~# kubectl version --client
Client Version: v1.33.0
Kustomize Version: v5.6.0
root@Debian:~#
```

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### Conteneurisation de l'application web Flask

```
root@Debian:~# ls -l Dockerfile
-rw-r--r-- 1 root root 189 15 mai 17:56 Dockerfile
root@Debian:~# █
```

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```

root@Debian:~# docker build -t ic-webapp:1.0 .
docker run --name test-ic-webapp -p 8080:8080 ic-webapp:1.0
[+] Building 35.3s (10/10) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile                0.1s
=> => transferring dockerfile: 228B                                0.0s
=> [internal] load metadata for docker.io/library/python:3.6-alpine 2.0s
=> [auth] library/python:pull token for registry-1.docker.io       0.0s
=> [internal] load .dockerignore                                   0.0s
=> => transferring context: 2B                                       0.0s
=> [1/4] FROM docker.io/library/python:3.6-alpine@sha256:579978dec460264 0.0s
=> [internal] load build context                                   2.9s
=> => transferring context: 841.00kB                                2.6s
=> CACHED [2/4] WORKDIR /opt                                       0.0s
=> [3/4] COPY . .                                                  10.5s
=> [4/4] RUN pip install flask                                     14.2s
=> exporting to image                                              5.5s
=> => exporting layers                                              5.4s
=> => writing image sha256:f0e3fe429fd3d2dc94922f32f5f6df79a99c48aab11a3 0.0s
=> => naming to docker.io/library/ic-webapp:1.0                    0.0s
docker: Error response from daemon: Conflict. The container name "/test-ic-webapp" is already in use by container "c8d4df12e6a9cf6271d74be2156621c3899b52d7035941495b3ebfcc461f3417". You have to remove (or rename) that container to be able to reuse that name.

Run 'docker run --help' for more information
root@Debian:~# ^C
root@Debian:~#

```

```

root@Debian:~#
root@Debian:~# docker ps -a

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	NAMES
be738c8a65b5	hello-world	"/hello"	16 hours ago	Exited (0)	happy_almeida
c8d4df12e6a9	b89ff653e536	"python app.py"	2 days ago	Exited (137)	test-ic-webapp
6d6a1aeb2ebe	registry	"/entrypoint.sh /etc..."	6 months ago	Exited (255)	REGISTRYLOCAL
ccdac7e25ce6	centos	"bash"	6 months ago	Exited (0)	centos3
411f6f64df62	centos	"bash"	6 months ago	Created	centos2
f09fc55268cb	centos	"bash"	6 months ago	Exited (1)	centos1
de8611afdc3b	centos	"bash"	6 months ago	Exited (0)	testdata
ae7e5aaa3c71	busybox	"true"	6 months ago	Exited (0)	donnees

```

root@Debian:~#

```

```
root@Debian:~# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
Ebankoli-Ulrick/ic-webapp	1.0	f0e3fe429fd3	9 minutes ago	293MB
ic-webapp	1.0	f0e3fe429fd3	9 minutes ago	293MB
ebankoli/ic-webapp	1.0	b89ff653e536	2 days ago	53.6MB
yourdockerhub/ic-webapp	1.0	b89ff653e536	2 days ago	53.6MB
gcr.io/k8s-minikube/kicbase	v0.0.46	e72c4cbe9b29	4 months ago	1.31GB
debian	latest	617f2e89852e	7 months ago	117MB
nginx	latest	3b25b682ea82	7 months ago	192MB
busybox	latest	27a71e19c956	7 months ago	4.27MB
alpine	latest	91ef0af61f39	8 months ago	7.8MB
registry	latest	75ef5b734af4	19 months ago	25.4MB
hello-world	latest	d2c94e258dc9	2 years ago	13.3kB
centos	latest	5d0da3dc9764	3 years ago	231MB

```
root@Debian:~# docker push ebankoli-ulrick/ic-webapp:1.0
```

The push refers to repository [docker.io/ebankoli-ulrick/ic-webapp]

An image does not exist locally with the tag: ebankoli-ulrick/ic-webapp

```
root@Debian:~# docker push ebankoli/ic-webapp:1.0
```

The push refers to repository [docker.io/ebankoli/ic-webapp]

94cf8d2cca1f: Layer already exists

dcc132f21c86: Layer already exists

5f70bf18a086: Layer already exists

3156423bd38f: Layer already exists

efa76becf38b: Layer already exists

671e3248113c: Layer already exists

1965cfbef2ab: Layer already exists

8d3ac3489996: Layer already exists

1.0: digest: sha256:149ab28a104c0d122c04bb18d25ef43417deda8de5d4c362e265e0bc4a81b9e2 size: 1996

```
root@Debian:~# ^C
```

```
root@Debian:~# docker search ebankoli/ic-webapp
```

NAME	STARS	OFFICIAL	DESCRIPTION
ebankoli/ic-webapp	0		
airbyte/webapp	13		
hashicorp/demo-webapp-lb-guide	1		
hashicorp/demo-webapp			Sample web app use
d during Nomad 101 trainin...	1		
camunda/web-modeler-webapp	0		
nypl/circ-webapp			Library Simplified
Circulation Manager Web A...	0		
climatemind/webapp	0		
elestio/bigcapital-webapp			Bigcapital-webapp,
verified and packaged by ...	0		
airbyte/airbyte-webapp	0		
apache/sdap-nexus-webapp	0		
apache/incubator-kie-sandbox-webapp	0		
webapp7/webapp7			Our english academ
y	0		
osuosl/python_webapp	0		
apache/incubator-kie-sandbox-dev-deployment-dmn-form-webapp	0		
webappappapp/webappweblinux88	0		
webappappapp/webappweb8888	0		
inseefrlab/satellite-images-webapp	0		
training/webapp	0		

## Déploiement Kubernetes