

# **Déploiement de services via Docker et Portainer.io**

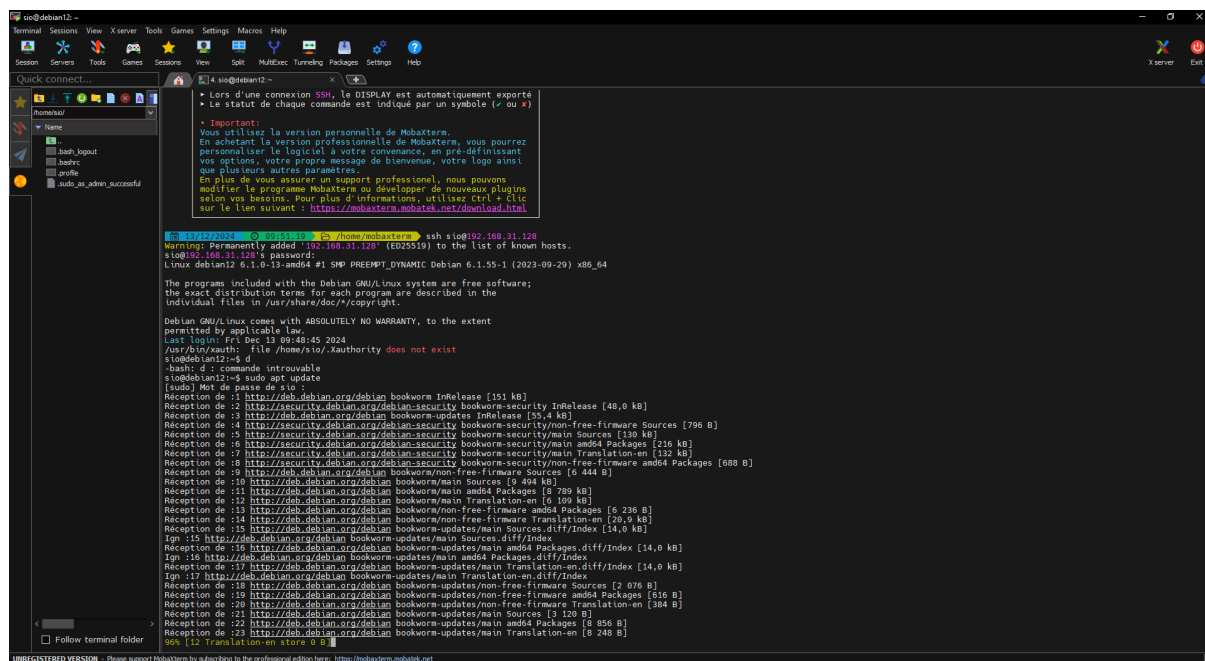
## Déploiement de services via Docker et Portainer.io

Mise en place d'un environnement Docker sur une machine Linux pour faciliter le déploiement de services en conteneurs, avec une interface de gestion web grâce à Portainer.io.

### 1. Mise à jour du système et installation de Docker

Mise à jour des paquets et vérification de l'installation de Docker.

- `apt update`
- Vérification avec `docker --version`



```
stg@debian12:~$ apt update
Get:1 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:2 http://security.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Get:3 http://deb.debian.org/debian bookworm-updates InRelease [50.4 kB]
Get:4 http://security.debian.org/debian-security bookworm-security/non-free-firmware Sources [796 B]
Get:5 http://security.debian.org/debian-security bookworm-security/main Sources [130 kB]
Get:6 http://security.debian.org/debian-security bookworm-security/main amd64 Packages [216 kB]
Get:7 http://security.debian.org/debian-security bookworm-security/main Translation-en [132 kB]
Get:8 http://security.debian.org/debian-security bookworm-security/non-free-firmware amd64 Packages [688 B]
Get:9 http://deb.debian.org/debian bookworm/non-free-firmware Sources [6 444 B]
Get:10 http://deb.debian.org/debian bookworm/main Sources [9 494 kB]
Get:11 http://deb.debian.org/debian bookworm/main amd64 Packages [8 789 kB]
Get:12 http://deb.debian.org/debian bookworm/main Translation-en [6 109 kB]
Get:13 http://deb.debian.org/debian bookworm/non-free-firmware amd64 Packages [6 236 B]
Get:14 http://deb.debian.org/debian bookworm/non-free-firmware Translation-en [20.9 kB]
Get:15 http://deb.debian.org/debian bookworm-updates/main Sources.diff/Index [14.0 kB]
Get:16 http://deb.debian.org/debian bookworm-updates/main amd64 Packages.diff/Index [14.0 kB]
Get:17 http://deb.debian.org/debian bookworm-updates/main Translation-en.diff/Index [14.0 kB]
Ign:17 http://deb.debian.org/debian bookworm-updates/main Translation-en.diff/Index
Get:18 http://deb.debian.org/debian bookworm-updates/non-free-firmware Sources [2 076 B]
Get:19 http://deb.debian.org/debian bookworm-updates/non-free-firmware amd64 Packages [616 B]
Get:20 http://deb.debian.org/debian bookworm-updates/non-free-firmware Translation-en [384 B]
Get:21 http://deb.debian.org/debian bookworm-updates/main Sources [3 120 B]
Get:22 http://deb.debian.org/debian bookworm-updates/main amd64 Packages [8 856 B]
Get:23 http://deb.debian.org/debian bookworm-updates/main Translation-en [8 248 B]
96% [22 Translation-en store 0 B]
Hit:1 http://deb.debian.org/debian bookworm InRelease
Hit:2 http://security.debian.org/debian-security bookworm-security InRelease
Hit:3 http://deb.debian.org/debian bookworm-updates InRelease
Hit:4 http://security.debian.org/debian-security bookworm-security/non-free-firmware Sources
Hit:5 http://security.debian.org/debian-security bookworm-security/main Sources
Hit:6 http://security.debian.org/debian-security bookworm-security/main amd64 Packages
Hit:7 http://security.debian.org/debian-security bookworm-security/main Translation-en
Hit:8 http://security.debian.org/debian-security bookworm-security/non-free-firmware amd64 Packages
Hit:9 http://deb.debian.org/debian bookworm/non-free-firmware Sources
Hit:10 http://deb.debian.org/debian bookworm/main Sources
Hit:11 http://deb.debian.org/debian bookworm/main amd64 Packages
Hit:12 http://deb.debian.org/debian bookworm/main Translation-en
Hit:13 http://deb.debian.org/debian bookworm/non-free-firmware amd64 Packages
Hit:14 http://deb.debian.org/debian bookworm/non-free-firmware Translation-en
Hit:15 http://deb.debian.org/debian bookworm-updates/main Sources.diff/Index
Hit:16 http://deb.debian.org/debian bookworm-updates/main amd64 Packages.diff/Index
Hit:17 http://deb.debian.org/debian bookworm-updates/main Translation-en.diff/Index
Hit:18 http://deb.debian.org/debian bookworm-updates/non-free-firmware Sources
Hit:19 http://deb.debian.org/debian bookworm-updates/non-free-firmware amd64 Packages
Hit:20 http://deb.debian.org/debian bookworm-updates/non-free-firmware Translation-en
Hit:21 http://deb.debian.org/debian bookworm-updates/main Sources
Hit:22 http://deb.debian.org/debian bookworm-updates/main amd64 Packages
Hit:23 http://deb.debian.org/debian bookworm-updates/main Translation-en
96% [22 Translation-en store 0 B]
```

```
sio@debian12:~$ sudo docker version
Client:
Version:      20.10.24+dfsg1
API version:  1.41
Go version:   go1.19.8
Git commit:   297e128
Built:        Sat Oct 12 15:19:49 2024
OS/Arch:      linux/amd64
Context:      default
Experimental: true

Server:
Engine:
Version:      20.10.24+dfsg1
API version:  1.41 (minimum version 1.12)
Go version:   go1.19.8
Git commit:   5d6db84
Built:        Sat Oct 12 15:19:49 2024
OS/Arch:      linux/amd64
Experimental: false
containerd:
Version:      1.6.20~ds1
GitCommit:    1.6.20~ds1-1+b1
runc:
Version:      1.1.5+ds1
GitCommit:    1.1.5+ds1-1+deb12u1
docker-init:
Version:      0.19.0
GitCommit:
sio@debian12:~$
```

---

## 2. Test initial avec une image Docker

Téléchargement et exécution de l'image "hello-world" pour valider l'installation de Docker.

```

sio@debian12:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ubuntu        latest    b1d9df8ab815   3 weeks ago    78.1MB
ubuntu        lunar     f4cdeba72b99   12 months ago  70.3MB
hello-world    latest    d2c94e258dcb   19 months ago  13.3kB
sio@debian12:~$ sudo docker rmi image hello-world
Untagged: hello-world:latest
Untagged: hello-world@sha256:5b3cc85e16e3058003c13b7821318369dad01dac3dbb877aa
Deleted: sha256:d2c94e258dcb3c5ac2798d32e1249e42ef01cba4841c2234249495f87264ac
Deleted: sha256:ac28800ec8bb38d5c35b49d45a6ac4777544941199075dff8c4eb63e093aa8
Error: No such image: image
sio@debian12:~$ sudo docker rmi hello-world
Error: No such image: hello-world
sio@debian12:~$ sudo images
sudo: images : commande introuvable
sio@debian12:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ubuntu        latest    b1d9df8ab815   3 weeks ago    78.1MB
ubuntu        lunar     f4cdeba72b99   12 months ago  70.3MB
sio@debian12:~$ █

```

### 3. Création et gestion de conteneurs Ubuntu

Création d'un conteneur Ubuntu en mode interactif, test de plusieurs instances et suppression de conteneurs.

```

[sudo] Mot de passe de sio :
sha256:b2ce2016243abf867da831db279a7727d4ce84db265f0c0e1a12d2feb7935e23
sio@debian12:~$ sudo docker commit S2RVUBUNTU kcheroret/ubuntu:ssh
sha256:235f166777714747e6590a96d71df289d32a365e320a0e33c2e191e9415ea9ca
sio@debian12:~$ sudo docker image

Usage: docker image COMMAND

Manage images

Commands:
  build      Build an image from a Dockerfile
  history    Show the history of an image
  import     Import the contents from a tarball to create a filesystem image
  inspect    Display detailed information on one or more images
  load       Load an image from a tar archive or STDIN
  ls         List images
  prune      Remove unused images
  pull       Pull an image or a repository from a registry
  push       Push an image or a repository to a registry
  rm         Remove one or more images
  save       Save one or more images to a tar archive (streamed to STDOUT by default)
  tag        Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE

Run 'docker image COMMAND --help' for more information on a command.
sio@debian12:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
kcheroret/ubuntu  ssh       235f16677771   39 seconds ago  249MB
<none>         <none>    b2ce2016243a   About a minute ago  249MB
ubuntu        latest    b1d9df8ab815   3 weeks ago    78.1MB
ubuntu        lunar     f4cdeba72b99   12 months ago  70.3MB
sio@debian12:~$ sudo docker rm b2ce2016243a
Error: No such container: b2ce2016243a
sio@debian12:~$ sudo docker rm images b2ce2016243a
Error: No such container: images
Error: No such container: b2ce2016243a
sio@debian12:~$ sudo docker rmi b2ce2016243a
Deleted: sha256:b2ce2016243abf867da831db279a7727d4ce84db265f0c0e1a12d2feb7935e23
sio@debian12:~$ sudo docker save kcheroret/ubuntu
cowardly refusing to save to a terminal. Use the -o flag or redirect
sio@debian12:~$ sudo docker save kcheroret/ubuntu:ssh
cowardly refusing to save to a terminal. Use the -o flag or redirect
sio@debian12:~$ sudo docker save kcheroret/ubuntu:ssh > serv_ubuntu-ssh.tar
sio@debian12:~$ ls
serv_ubuntu-ssh.tar
sio@debian12:~$ █

```

```
sio@debian12:~$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
ubuntu latest b1d9df8ab815 3 weeks ago 78.1MB
ubuntu lunar f4cdeba72b99 12 months ago 70.3MB
sio@debian12:~$ sudo docker run ubuntu
sio@debian12:~$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
dd205f72c81d ubuntu "/bin/bash" 47 seconds ago Exited (0) 46 seconds ago silly_kalam
sio@debian12:~$ sudo docker run ubuntu
sio@debian12:~$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
0aa4031f3879 ubuntu "/bin/bash" 3 seconds ago Exited (0) 2 seconds ago stoic_galois
dd205f72c81d ubuntu "/bin/bash" 2 minutes ago Exited (0) 2 minutes ago silly_kalam
sio@debian12:~$ docker run ubuntu cat /etc/lsb-release
docker: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/create": dial unix /var/run/docker.sock: connect: permission denied.
See 'docker run --help'.
sio@debian12:~$ sudo docker run ubuntu cat /etc/lsb-release
cat: /etc/lsb-release: No such file or directory
sio@debian12:~$ sudo docker run ubuntu cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=24.04
DISTRIB_CODENAME=noble
DISTRIB_DESCRIPTION="Ubuntu 24.04.1 LTS"
sio@debian12:~$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
754475337bd7 ubuntu "cat /etc/lsb-release" 5 seconds ago Exited (0) 4 seconds ago priceless_allen
c7de164e33ae ubuntu "cat /etc/lsb-release" 21 seconds ago Exited (1) 20 seconds ago sweet_brahmagupta
0aa4031f3879 ubuntu "/bin/bash" About a minute ago Exited (0) About a minute ago stoic_galois
dd205f72c81d ubuntu "/bin/bash" 3 minutes ago Exited (0) 3 minutes ago silly_kalam
sio@debian12:~$

sio@debian12:~$ sudo docker rm dd205f72c81d
dd205f72c81d
sio@debian12:~$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
754475337bd7 ubuntu "cat /etc/lsb-release" About a minute ago Exited (0) About a minute ago priceless_allen
c7de164e33ae ubuntu "cat /etc/lsb-release" About a minute ago Exited (1) About a minute ago sweet_brahmagupta
0aa4031f3879 ubuntu "/bin/bash" 2 minutes ago Exited (0) 2 minutes ago stoic_galois
sio@debian12:~$
```

## 4. Création d'une image personnalisée Ubuntu

Création d'une image personnalisée à partir d'un conteneur Ubuntu.

```
[sudo] Mot de passe de sio :
sha256:b2ce2016243abf867da831db279a7727d4ce84db265f0c0e1a12d2feb7935e23
sio@debian12:~$ sudo docker commit S2RVUBUNTU kcheroret/ubuntu:ssh
sha256:235f16677714747e6590a96d71df289d32a365e320a0e33c2e191e9415ea9ca
sio@debian12:~$ sudo docker image

Usage: docker image COMMAND

Manage images

Commands:
  build      Build an image from a Dockerfile
  history    Show the history of an image
  import     Import the contents from a tarball to create a filesystem image
  inspect    Display detailed information on one or more images
  load       Load an image from a tar archive or STDIN
  ls         List images
  prune      Remove unused images
  pull       Pull an image or a repository from a registry
  push       Push an image or a repository to a registry
  rm         Remove one or more images
  save       Save one or more images to a tar archive (streamed to STDOUT by default)
  tag        Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE

Run 'docker image COMMAND --help' for more information on a command.
sio@debian12:~$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
kcheroret/ubuntu ssh 235f1667771 39 seconds ago 249MB
<none> <none> b2ce2016243a About a minute ago 249MB
ubuntu latest b1d9df8ab815 3 weeks ago 78.1MB
ubuntu lunar f4cdeba72b99 12 months ago 70.3MB
sio@debian12:~$ sudo docker rm b2ce2016243a
Error: No such container: b2ce2016243a
sio@debian12:~$ sudo docker rm images b2ce2016243a
Error: No such container: images
Error: No such container: b2ce2016243a
sio@debian12:~$ sudo docker rmi b2ce2016243a
Deleted: sha256:b2ce2016243abf867da831db279a7727d4ce84db265f0c0e1a12d2feb7935e23
sio@debian12:~$ sudo docker save kcheroret/ubuntu
cowardly refusing to save to a terminal. Use the -o flag or redirect
sio@debian12:~$ sudo docker save kcheroret/ubuntu:ssh
cowardly refusing to save to a terminal. Use the -o flag or redirect
sio@debian12:~$ sudo docker save kcheroret/ubuntu:ssh > serv_ubuntu-ssh.tar
sio@debian12:~$ ls
serv_ubuntu-ssh.tar
sio@debian12:~$
```

## 5. Installation d'OpenSSH et création d'un utilisateur dans le conteneur

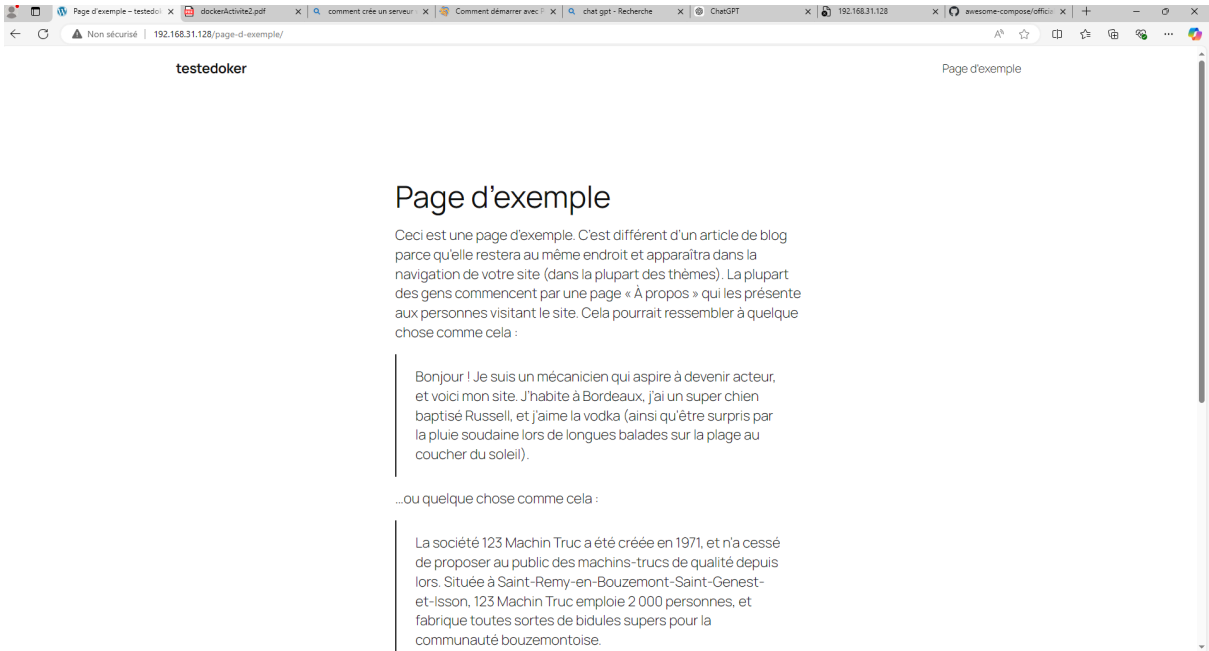
# Mise en place d'un accès SSH et configuration d'un utilisateur dans un conteneur Ubuntu.

```
debconf: falling back to frontend: Readline
debconf: unable to initialize frontend: Readline
debconf: (Can't locate Term/Readline.pm in @INC (you may need to install the Term::Readline module) (@INC entries checked: /etc/perl, /usr/local/lib/x86_64-linux-gnu/perl/5.38.2, /usr/local/share/perl/5.38.2, /usr/lib/x86_64-linux-gnu/perl/5.38, /usr/share/perl/5.38, /usr/lib/x86_64-linux-gnu/perl-base, /usr/lib/x86_64-linux-gnu/perl/5.38, /usr/share/perl/5.38, /usr/local/lib/site_perl) at /usr/share/perl5/debconf/frontend line 8.)
debconf: falling back to frontend: Teletype

Creating config file /etc/ssh/sshd_config with new version
Creating SSH2 RSA key; this may take some time ...
3072 SHA256:0ZkMeQ2b+evmRnysp6wN6w0vRP7cFALMIZcyo root@dbb846033cd (RSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:16Q0Yk9IVV+QbucGf5tab16PT6wH73)0nez5VVP8E root@dbb846033cd (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:0r2Ce5C0hxp0M4jVjLRmZ/M0U2Ac1345eXjLVfLO root@dbb846033cd (ED25519)
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Created symlink /etc/systemd/system/sockets.target.wants/ssh.socket → /usr/lib/systemd/system/ssh.socket.
Created symlink /etc/systemd/system/ssh.service.requires/ssh.socket → /usr/lib/systemd/system/ssh.socket.
Setting up python3 (3.12.3-0ubuntu2) ...
running python post-rtupdate hooks for python3.12...
Setting up python3-gi (3.40.2-3) ...
Setting up python3-dbus (1.3.2-5build3) ...
Setting up python3-distutils (3.10.9-1) ...
Setting up ssh-import-id (5.11-0ubuntu2) ...
Setting up networkd-dispatcher (2.2.4-1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/networkd-dispatcher.service → /usr/lib/systemd/system/networkd-dispatcher.service.
Processing triggers for libc-bin (2.39-0ubuntu3) ...
Processing triggers for ca-certificates (20240203) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
root@dbb846033cd:~# adduser user
info: Adding user 'user' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group 'user' (1001) ...
info: Adding new user 'user' (1001) with group 'user' (1001) ...
info: Creating home directory '/home/user' ...
info: Copying files from '/etc/skel' ...
New password:
Retype new password:
Sorry, passwords do not match.
passwd: Authentication token manipulation error
passwd: password unchanged
Try again? [y/N] y
changing the user information for user
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [y/n]
info: Adding new user 'user' to supplemental / extra groups 'users' ...
info: Adding user 'user' to group 'users' ...
root@dbb846033cd:~#
```

## 6. Déploiement automatisé de WordPress avec Docker

Utilisation d'un fichier Docker Compose ou d'une commande unique pour lancer une instance WordPress.



## 7. Installation et utilisation de Portainer.io

# Déploiement de Portainer.io pour la gestion graphique des conteneurs Docker.

