



Private Lab Virtualization Using Multipass and Deploy Apps web-based on Ubuntu Server.

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About Me



Nur Hamim

Linux and Cloud Enthusiast

Village child who like to learn Open Source, Linux, and Cloud Computing. Actively involved in community GNU/Linux in Indonesia, become the Founder of BelajarLinux.id and work at PT Biznet GIO Nusantara as Product Operation Engineer



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What a Multipass?

Multipass is a virtualization product from Canonical that we can use to create a virtual machine and support cloud-init like in a public cloud. Multipass can be run in a local environment for free and is very suitable for development.

Why use Multipass?

It's tiny, simple to use, quick to purge things when you've done. This lightweight VM manager can be installed on Linux, Windows, and macOS, and is designed for developers to be able to launch a fresh Ubuntu environment with a single command.

Multipass vs VirtualBox



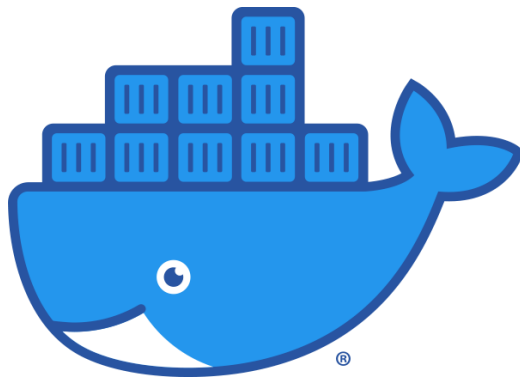
OR



Multipass vs Docker



OR

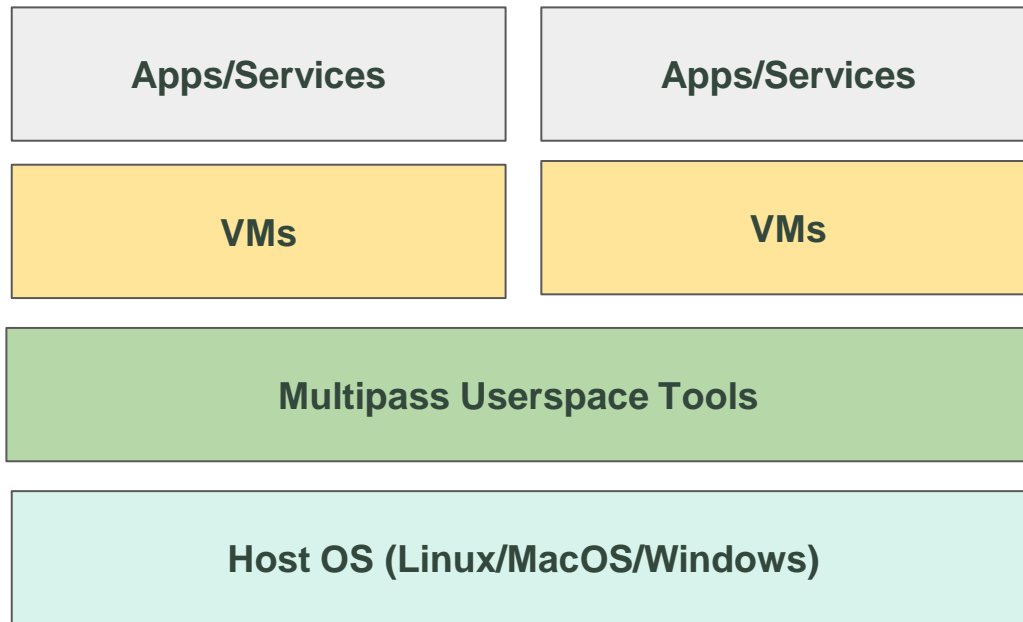


Multipass vs VirtualBox vs LXD

Multipass is meant to offer a universal Ubuntu experience across platforms. Multipass works on Linux, Windows and macOS and offers a similar experience on all three. It then uses whatever the best OS virtualization layer is to run the VM.

On Windows, that's using HyperV or VirtualBox, on macOS it uses hyperkit or VirtualBox and on Linux these days it uses LXD.

Multipass Flow



Pros and Cons Multipass

Pros:

- Simple, Easy, Light and fast in creating VMs
- Easy and Modern VMs management for development
- S u i t a b l e f o r d e v e l o p m e n t

Cons:

- Cannot resize specification automatically
- Requires additional drivers for add interface networks
- Few available OS (Images) default

Multipass for Kubernetes Cluster

Multipass offers a nice fast alternative to Docker. Multipass easily running cluster k3s and k8s.

Because, Multipass supports metadata for cloud-init - basically, you can create a config file to set up users and groups and even run arbitrary setup code.

- R e f e r e n c e :
- [How to build a highly available Kubernetes cluster with MicroK8s](#)
 - [Deploy a Kubernetes Desktop Cluster with Ubuntu Multipass](#)

Basic Cloud-init

Cloud-init is the standard for customizing cloud instances and now multipass can also make use of cloud-init to customize an instance during launch.

Reference: <https://cloud-init.io>

```
# Cloud Config
# Example cloud-init Multipass

ssh_authorized_keys:
- ssh-rsa AAAAB3....

package_update: true
apt_upgrade: true

packages:
- git
- vim
- wget
- docker.io

runcmd:
- [apt-get, dist-upgrade, -yy]
- [apt-get, clean, -yy]
- [apt-get, autoremove, -yy]
```

Install Multipass

O n L i n u x w i t h S n a p d

```
$ sudo snap install multipass
```

For architecture other than amd64, you'll need the beta

```
$ sudo snap install multipass --edge
```

Install Multipass

O n W i n d o w s

[Download Multipass for Windows](#)

Note: You need Windows 10 Pro/Enterprise/Education v 1803 or later, or any Windows 10 with VirtualBox

Install Multipass

O n M a c O S

[Download Multipass for Mac](#)

and If you'd like to use Multipass with VirtualBox use this
t e r m i n a l c o m m a n d :

```
$ sudo multipass set local.driver=virtualbox
```

Basic Command Multipass

Basic command-line in multipass

```
$ multipass --help
Usage: multipass [options] <command>
Create, control and connect to Ubuntu instances.

This is a command line utility for multipass, a
service that manages Ubuntu instances.

Options:
  -h, --help            Display this help
  -v, --verbose          Increase logging verbosity. Repeat the 'v' in the short option
                        for more detail. Maximum verbosity is obtained with 4 (or more)
                        v's, i.e. -vvvv.

Available commands:
delete      Delete instances
exec        Run a command on an instance
find        Display available images to create instances from
get         Get a configuration setting
help        Display help about a command
info        Display information about instances
launch      Create and start an Ubuntu instance
list        List all available instances
mount       Mount a local directory in the instance
networks    List available network interfaces
purge       Purge all deleted instances permanently
recover     Recover deleted instances
restart     Restart instances
set         Set a configuration setting
shell       Open a shell on a running instance
start       Start instances
stop        Stop running instances
suspend     Suspend running instances
transfer    Transfer files between the host and instances
umount      Unmount a directory from an instance
version     Show version details
```

How to use Multipass

Find

\$ multipass find

Launch

\$ multipass launch

Options: -c, -d, -m, -n, --cloud-init, --network, --bridged

Example:

- multipass launch 20.04 --name instance-demo --cpus 2 --mem 2G --disk 5G
- multipass launch 20.04 --name instance-demo --cpus 2 --mem 2G --disk 5G --cloud-init cloud-init.yaml
- multipass launch file:///home/ubuntu/images/CentOS-7-x86_64-GenericCloud.qcow2 --name centos7
- multipass launch https://mirror_images_cloud --name Rocky

How to use Multipass

Info

```
$ multipass info instance-demo
```

```
$ multipass info --format yaml instance-demo
```

List

```
$ multipass ls
```

```
$ multipass list --format yaml
```

Start, Stop and Delete

```
$ multipass start instance-demo
```

```
$ multipass stop instance-demo
```

```
$ multipass delete instance-demo
```

How to use Multipass

Recover, Purge

```
$ multipass recover instance-demo  
$ multipass purge
```

Shell, Exec

```
$ multipass shell instance-demo  
$ multipass exec instance-demo -- lsb_release -a | grep ^Codename:
```

Get, Set

```
$ multipass get client.gui.autostart  
$ multipass set client.gui.autostart=false
```

Multipass Networking

By default on Linux Multipass only have 1 interface. If you want use 2 interface, you need LXD drivers for network bridging.

```
$ sudo snap install lxd
$ sudo lxd init
$ sudo multipass set local.driver=lxd
```

Multipass Networking

Make sure driver LXD on Multipass

```
$ multipass get local.driver  
l                                x                                d
```

```
$ sudo snap connect multipass:lxd lxd
```

```
$ multipass networks  
Name      Type      Description  
ens3      ethernet  Ethernet device  
lxdbr0     bridge    Network bridge  
mpbr0     bridge    Network bridge for Multipass  
$  
$ multipass launch 20.04 --name instance-demo --network lxdbr0  
Launched: instance-demo  
$ multipass ls  
Name              State      IPv4              Image  
instance-demo     Running    10.193.82.82      Ubuntu 20.04 LTS  
                  10.52.23.249  
$
```

Integration Multipass

Multipass can be integrated into multiple virtual machine managers such as virsh, virt-manager, and VirtualBox

R e f e r e n c e :

- <https://multipass.run/docs/using-libvirt>
- <https://multipass.run/docs/using-virtualbox-in-multipass-windows>
- <https://multipass.run/docs/using-virtualbox-in-multipass-macos>

Demo time !

Install web-based applications with VMs Multipass

Thank you !