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Lab: Docker

Kiểm tra phiên bản docker

```
Command Prompt
Cloud integration: 1.0.4
Version: 20.10.2
API version: 1.41
Go version: go1.13.15
Git commit: 2291f61
Built: Mon Dec 28 16:14:16 2020
OS/Arch: windows/amd64
Context: default
Experimental: true

Server: Docker Engine - Community
Engine:
  Version: 20.10.2
  API version: 1.41 (minimum version 1.12)
  Go version: go1.13.15
  Git commit: 8891c58
  Built: Mon Dec 28 16:15:23 2020
  OS/Arch: linux/amd64
  Experimental: false
containerd:
  Version: v1.4.3
  GitCommit: 269548fa27e0089a8b8278fc4fc781d7f65a939b
runc:
  Version: 1.0.0-rc92
  GitCommit: ff819c7e9184c13b7c2607fe6c30ae19403a7aff
docker-init:
  Version: 0.19.0
  GitCommit: de40ad0

C:\Users\khoa2>
```

Kiểm tra version docker machine

```
MINGW64:/c/Users/khoa2

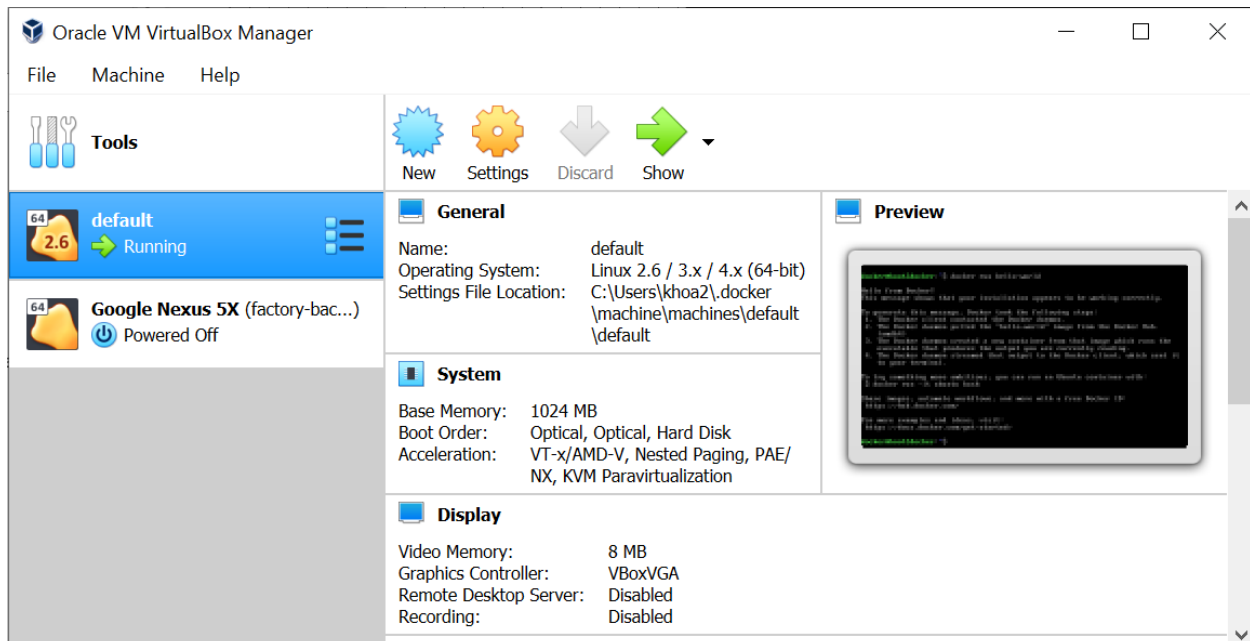
khoa2@DESKTOP-FPNC00M MINGW64 ~ (master)
$ if [[ ! -d "$HOME/bin" ]]; then mkdir -p "$HOME/bin"; fi && \
> curl -L https://github.com/docker/machine/releases/download/v0.12.2/docker-machine-windows-x86_64.exe > "$HOME/bin/docker-machine.exe" && \
> chmod +x "$HOME/bin/docker-machine.exe"
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left     Speed
100  657    100  657    0     0   1126      0  --:--:-- --:--:-- --:--:--  1128
100 25.6M    100 25.6M    0     0  255k      0  0:01:42  0:01:42 --:--:-- 207k

khoa2@DESKTOP-FPNC00M MINGW64 ~ (master)
$ docker-machine version
docker-machine.exe version 0.12.2, build 9371605

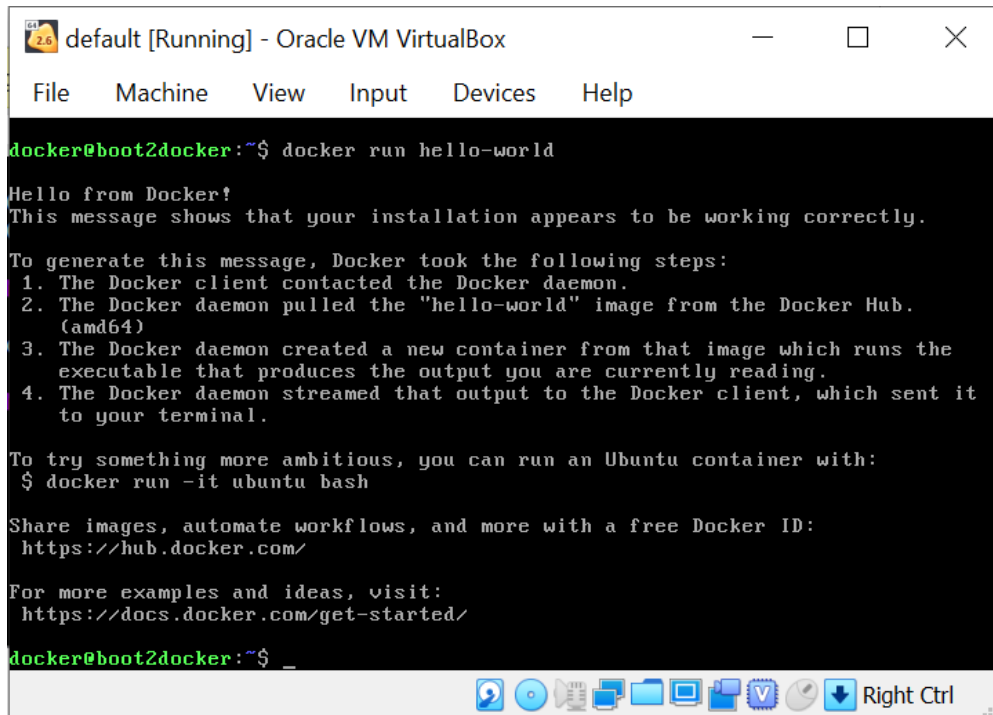
khoa2@DESKTOP-FPNC00M MINGW64 ~ (master)
$ |
```

Để có thể sử dụng máy ảo trong window10 home phải chạy dòng lệnh này trong command line: `bcdedit /set hypervisorlaunchtype off`

Tạo 1 máy ảo tên default



Test thử với câu lệnh docker run hello-world



```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

docker@boot2docker:~$ docker run hello-world

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)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

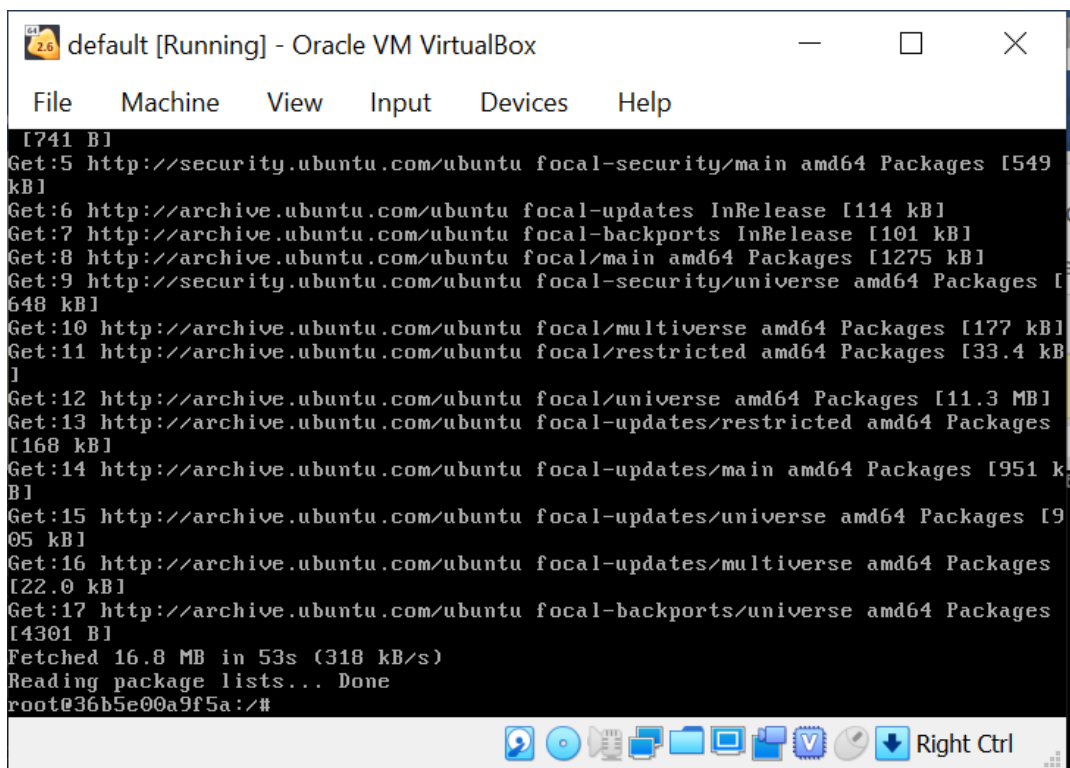
To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

docker@boot2docker:~$
```

Chạy câu lệnh docker run -it ubuntu bash

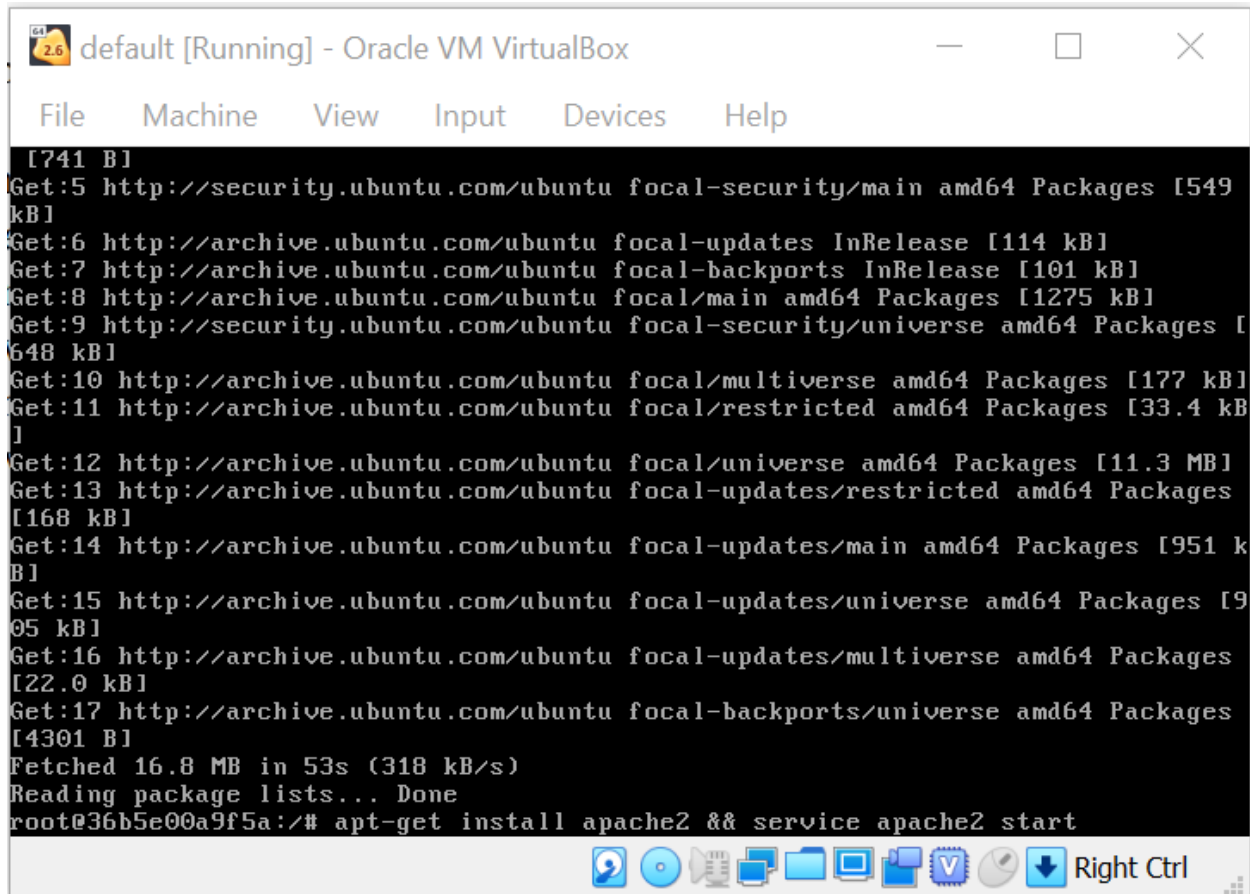


```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

[741 B]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [549
kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [
648 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB
]
Get:12 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages
[168 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [951 k
B]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [9
05 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages
[22.0 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages
[4301 B]
Fetched 16.8 MB in 53s (318 kB/s)
Reading package lists... Done
root@36b5e00a9f5a:/#
```

Sau đó cập nhật gói phần mềm với câu lệnh `apt-get update`

Sau đó cài đặt apache2 với câu lệnh `apt-get install apache2 && service apache2 start`



```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
[741 B]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [549
kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [
648 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB
]
Get:12 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages
[168 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [951 k
B]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [9
05 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages
[22.0 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages
[4301 B]
Fetched 16.8 MB in 53s (318 kB/s)
Reading package lists... Done
root@36b5e00a9f5a:/# apt-get install apache2 && service apache2 start
```

```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

The following NEW packages will be installed:
apache2 apache2-bin apache2-data apache2-utils ca-certificates file
krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap
libasn1-8-heimdal libbrotli1 libcurl4 libexpat1 libgdbm-compat4 libgdbm6
libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal
libheimntlm0-heimdal libhx509-5-heimdal libicu66 libjansson4 libk5crypto3
libkeyutils1 libkrb5-26-heimdal libkrb5-3 libkrb5support0 libldap-2.4-2
libldap-common liblua5.2-0 libmagic-mgc libmagic1 libnghttp2-14 libperl5.30
libpsl5 libroken18-heimdal librtmp1 libsasl2-2 libsasl2-modules
libsasl2-modules-db libsqlite3-0 libssh-4 libssl1.1 libwind0-heimdal libxml2
mime-support netbase openssl perl perl-modules-5.30 publicsuffix ssl-cert
tzdata xz-utils
0 upgraded, 57 newly installed, 0 to remove and 3 not upgraded.
Need to get 24.1 MB of archives.
After this operation, 117 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 perl-modules-5.3
0 all 5.30.0-9ubuntu0.2 [2738 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm6 amd64 1.18.1-5
[27.4 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal/main amd64 libgdbm-compat4 amd64 1.
18.1-5 [6244 B]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libperl5.30 amd6
4 5.30.0-9ubuntu0.2 [3952 kB]
13% [4 libperl5.30 804 kB/3952 kB 20%] 290 kB/s 1min 10s
```

Chọn vùng lãnh thổ để tiếp tục cài đặt

```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

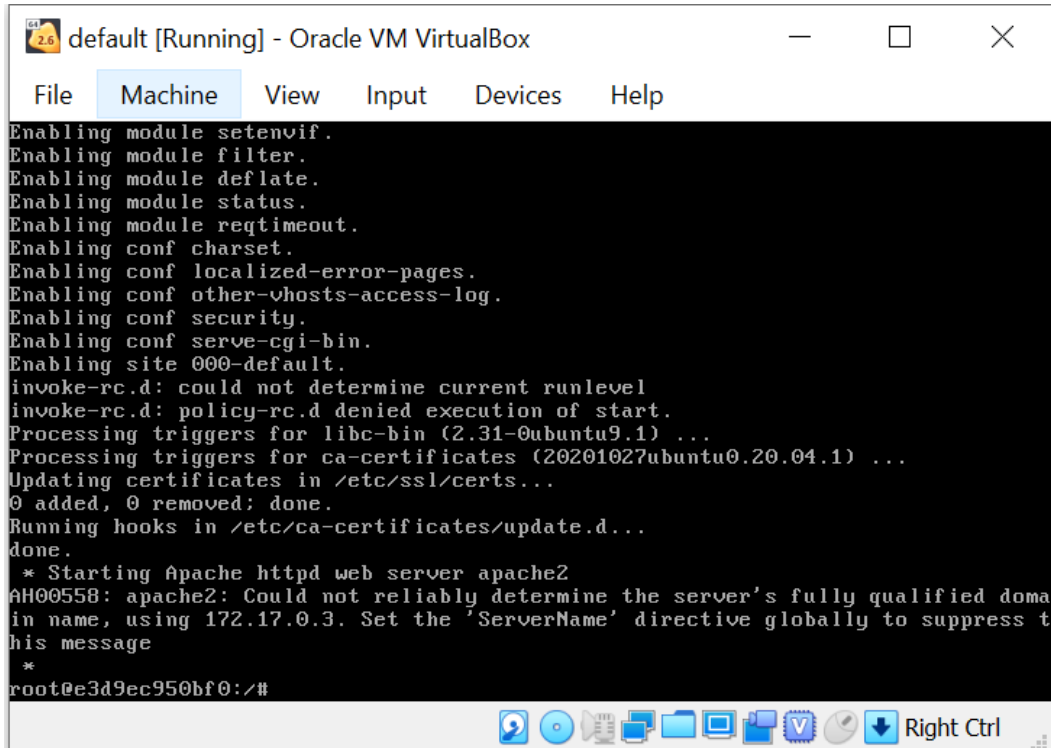
Setting up libnghttp2-14:amd64 (1.40.0-1build1) ...
Setting up libmagic1:amd64 (1:5.38-4) ...
Setting up libapr1:amd64 (1.6.5-1ubuntu1) ...
Setting up krb5-locales (1.17-6ubuntu4.1) ...
Setting up file (1:5.38-4) ...
Setting up libldap-common (2.4.49+dfsg-2ubuntu1.5) ...
Setting up libjansson4:amd64 (2.12-1build1) ...
Setting up libkrb5support0:amd64 (1.17-6ubuntu4.1) ...
Setting up libsasl2-modules-db:amd64 (2.1.27+dfsg-2) ...
Setting up tzdata (2020f-0ubuntu0.20.04.1) ...
debconf: unable to initialize frontend: Dialog
debconf: (No usable dialog-like program is installed, so the dialog based fronte
nd cannot be used. at /usr/share/perl5/Debconf/FrontEnd/Dialog.pm line 76.)
debconf: falling back to frontend: Readline
Configuring tzdata
-----

Please select the geographic area in which you live. Subsequent configuration
questions will narrow this down by presenting a list of cities, representing
the time zones in which they are located.

  1. Africa          4. Australia  7. Atlantic  10. Pacific  13. Etc
  2. America         5. Arctic   8. Europe    11. SystemV
  3. Antarctica     6. Asia     9. Indian    12. US

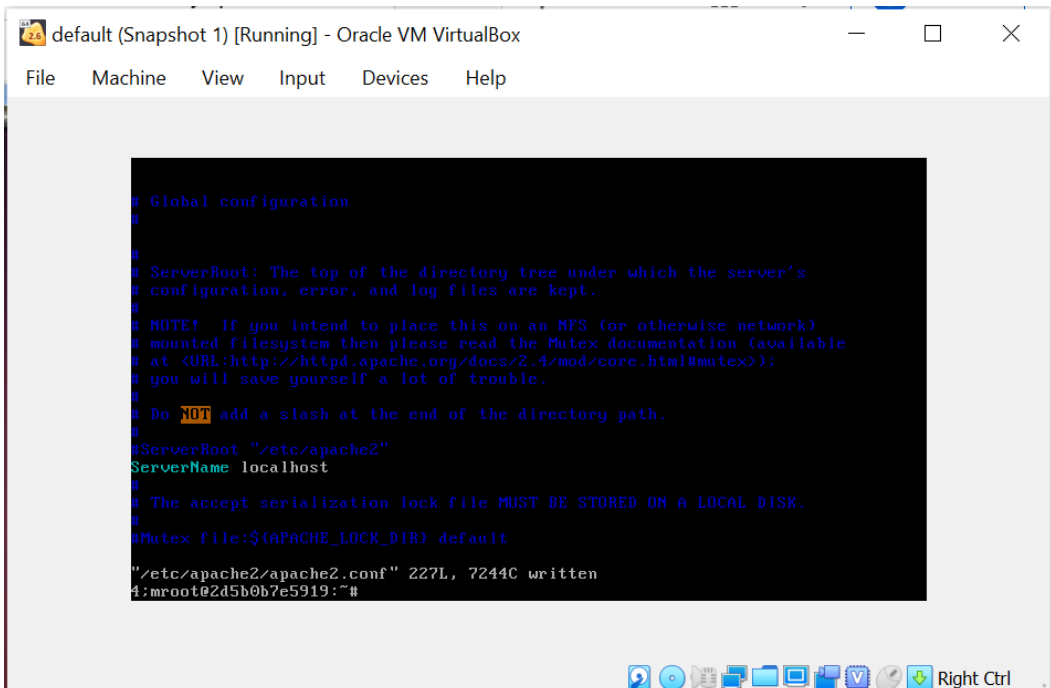
Geographic area: _
```

Apache2 đã khởi động nhưng được yêu cầu nên đặt ServerName (không thay đổi cũng không sao)



```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Processing triggers for libc-bin (2.31-0ubuntu9.1) ...
Processing triggers for ca-certificates (20201027ubuntu0.20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
* Starting Apache httpd web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.3. Set the 'ServerName' directive globally to suppress this message
*
root@e3d9ec950bf0:/#
```

Để đặt ServerName thì tìm đến đường dẫn /etc/apache2/apache2.conf và đặt ServerName là localhost hoặc địa chỉ Ip

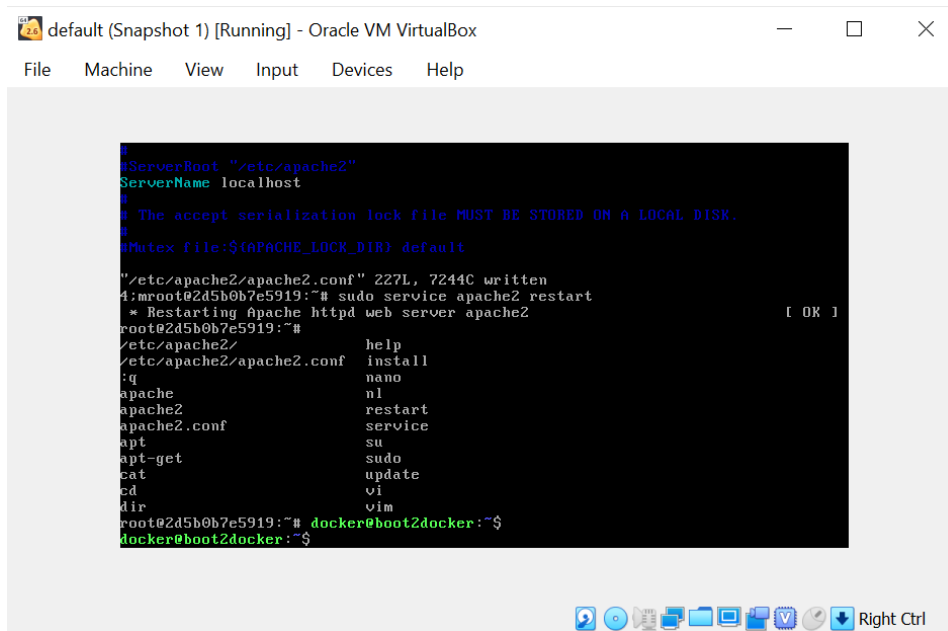


```
default (Snapshot 1) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

# Global configuration
#
#
# ServerRoot: The top of the directory tree under which the server's
# configuration, error, and log files are kept.
#
# NOTE! If you intend to place this on an NFS (or otherwise network)
# mounted filesystem then please read the Mutex documentation (available
# at <URL:http://httpd.apache.org/docs/2.4/mod/core.html#mutex>);
# you will save yourself a lot of trouble.
#
# Do NOT add a slash at the end of the directory path.
#
#ServerRoot "/etc/apache2"
ServerName localhost
#
# The accept serialization lock file MUST BE STORED ON A LOCAL DISK.
#
#Mutex file:${APACHE_LOCK_DIR} default

"/etc/apache2/apache2.conf" 227L, 7244C written
4:mroot@2d5b0b7e5919:/#
```

Dùng Ctrl + P, Ctrl + Q để chuyển màn hình

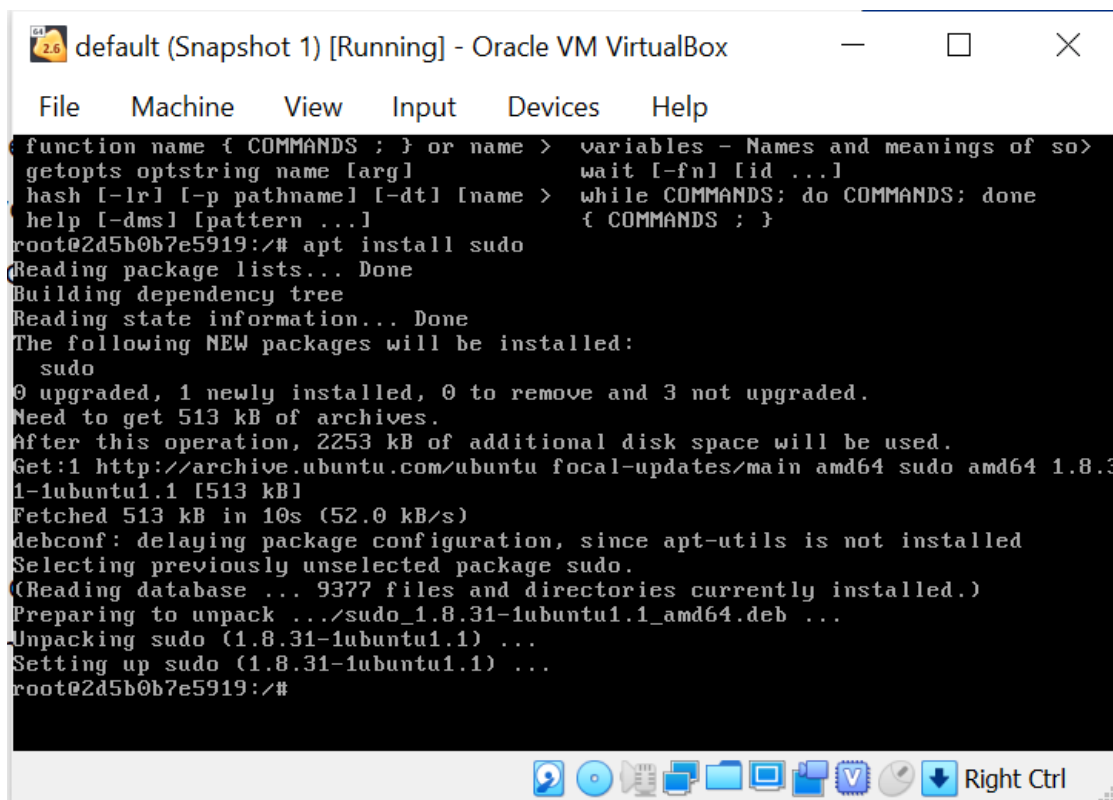


```
default (Snapshot 1) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

ServerRoot "/etc/apache2"
ServerName localhost
# The accept serialization lock file MUST BE STORED ON A LOCAL DISK.
# Mutex file:${APACHE_LOCK_DIR} default

"/etc/apache2/apache2.conf" 227L, 7244C written
root@2d5b0b7e5919:~# sudo service apache2 restart
* Restarting Apache httpd web server apache2 [ OK ]
root@2d5b0b7e5919:~#
/etc/apache2/ help
/etc/apache2/apache2.conf install
:q nano
apache nl
apache2 restart
apache2.conf service
apt su
apt-get sudo
cat update
cd vi
dir vim
root@2d5b0b7e5919:~# docker@boot2docker:~$
docker@boot2docker:~$
```

Ở đây mình cài gói sudo với câu lệnh apt install sudo

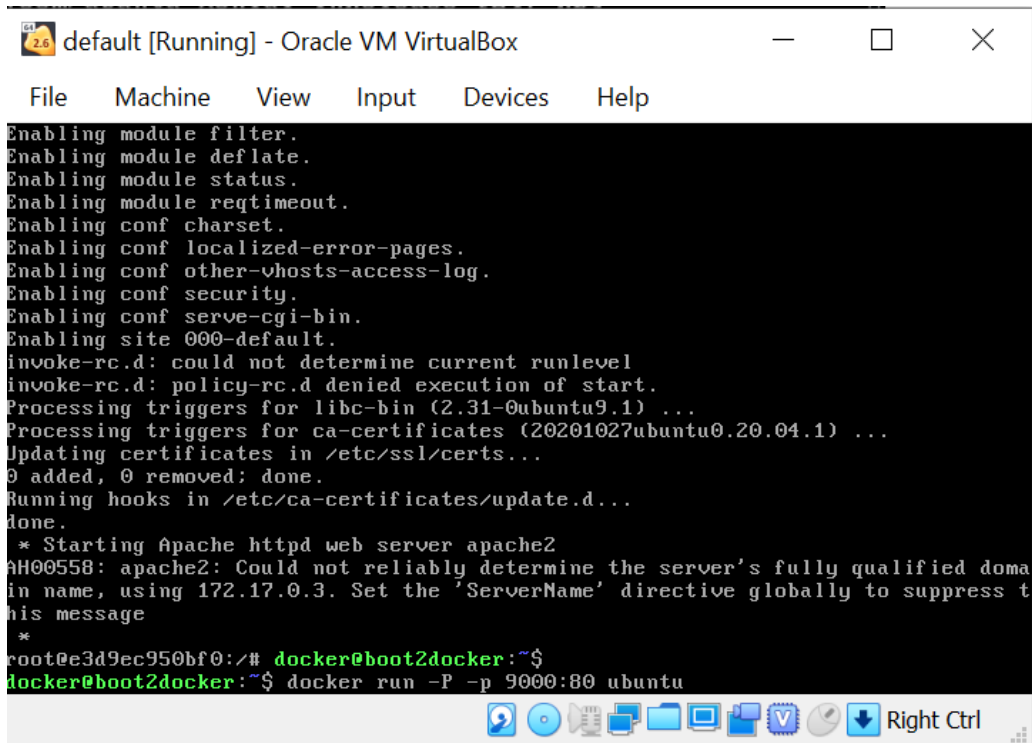


```
default (Snapshot 1) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

function name { COMMANDS ; } or name > variables - Names and meanings of so>
getopts optstring name [arg] wait [-fn] [id ...]
hash [-lr] [-p pathname] [-dt] [name > while COMMANDS; do COMMANDS; done
help [-dms] [pattern ...] { COMMANDS ; }

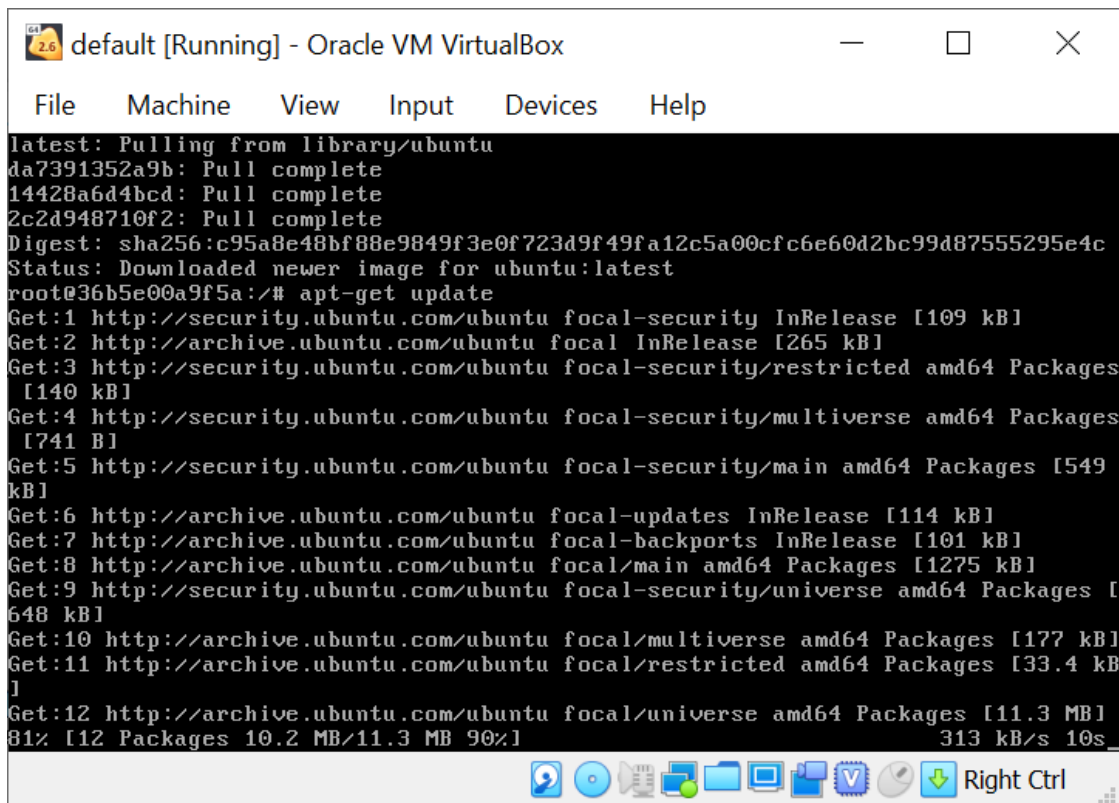
root@2d5b0b7e5919:~# apt install sudo
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  sudo
0 upgraded, 1 newly installed, 0 to remove and 3 not upgraded.
Need to get 513 kB of archives.
After this operation, 2253 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 sudo amd64 1.8.3
1-1ubuntu1.1 [513 kB]
Fetched 513 kB in 10s (52.0 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package sudo.
(Reading database ... 9377 files and directories currently installed.)
Preparing to unpack .../sudo_1.8.31-1ubuntu1.1_amd64.deb ...
Unpacking sudo (1.8.31-1ubuntu1.1) ...
Setting up sudo (1.8.31-1ubuntu1.1) ...
root@2d5b0b7e5919:~#
```

Dùng câu lệnh docker run -P -p 9000:80 ubuntu



```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Processing triggers for libc-bin (2.31-0ubuntu9.1) ...
Processing triggers for ca-certificates (20201027ubuntu0.20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
* Starting Apache httpd web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.3. Set the 'ServerName' directive globally to suppress this message
*
root@e3d9ec950bf0:/# docker@boot2docker:~$
docker@boot2docker:~$ docker run -P -p 9000:80 ubuntu
```

Do ở đây lỗi nên phải chạy lại gói update



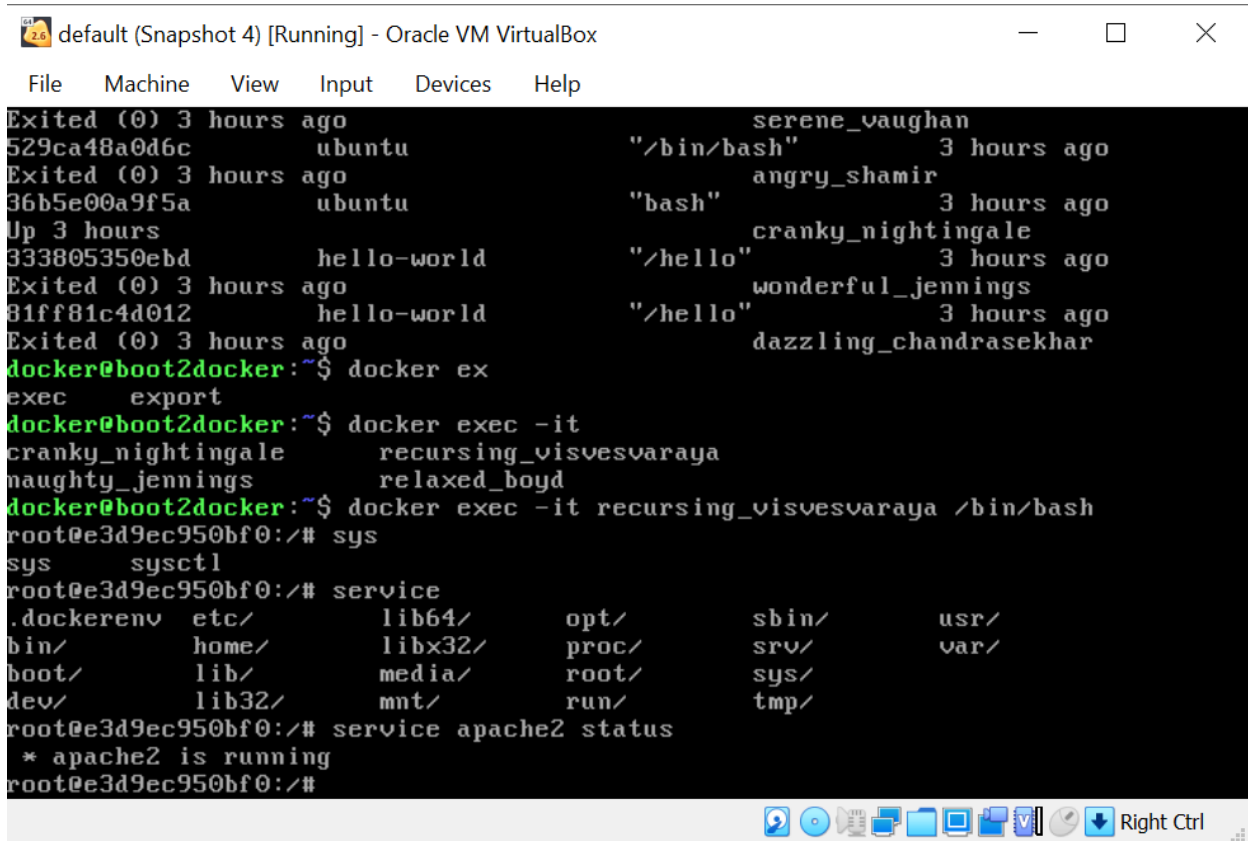
```
default [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
latest: Pulling from library/ubuntu
da7391352a9b: Pull complete
14428a6d4bcd: Pull complete
2c2d948710f2: Pull complete
Digest: sha256:c95a8e48bf88e9849f3e0f723d9f49fa12c5a00cfc6e60d2bc99d87555295e4c
Status: Downloaded newer image for ubuntu:latest
root@36b5e00a9f5a:/# apt-get update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [109 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [140 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [741 B]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [549 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [648 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
81% [12 Packages 10.2 MB/11.3 MB 90%] 313 kB/s 10s_
```


Dùng câu lệnh docker ps -a để xem các cointainer ID

Dùng câu lệnh docker rm để xóa bớt các cointainer không chạy

Dùng câu lệnh docker exec -it và xem những cointaner nào đang chạy thì sẽ dùng

Dùng câu lệnh service apache2 status để xem apache2 có đang chạy không



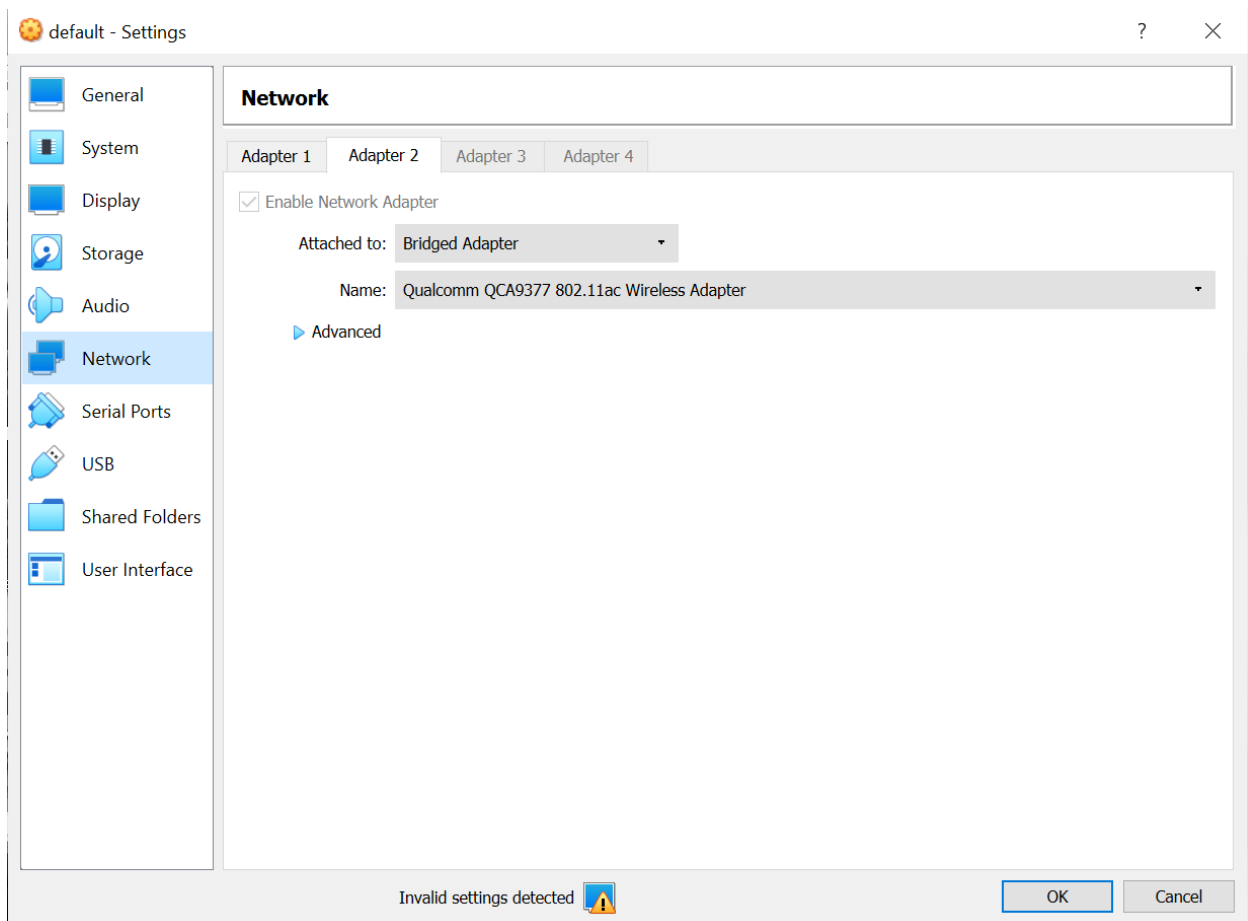
```
File Machine View Input Devices Help
Exited (0) 3 hours ago serene_vaughan
529ca48a0d6c ubuntu "/bin/bash" 3 hours ago
Exited (0) 3 hours ago angry_shamir
36b5e00a9f5a ubuntu "bash" 3 hours ago
Up 3 hours cranky_nightingale
333805350ebd hello-world "/hello" 3 hours ago
Exited (0) 3 hours ago wonderful_jennings
81ff81c4d012 hello-world "/hello" 3 hours ago
Exited (0) 3 hours ago dazzling_chandrasekhar
docker@boot2docker:~$ docker ex
exec export
docker@boot2docker:~$ docker exec -it
cranky_nightingale recursing_visvesvaraya
naughty_jennings relaxed_boyd
docker@boot2docker:~$ docker exec -it recursing_visvesvaraya /bin/bash
root@e3d9ec950bf0:/# sys
sys sysctl
root@e3d9ec950bf0:/# service
.dockerenv etc/ lib64/ opt/ sbin/ usr/
bin/ home/ libx32/ proc/ srv/ var/
boot/ lib/ media/ root/ sys/
dev/ lib32/ mnt/ run/ tmp/
root@e3d9ec950bf0:/# service apache2 status
* apache2 is running
root@e3d9ec950bf0:/#
```

```
default (Snapshot 4) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

CONTAINER ID    IMAGE    COMMAND    CREATED
STATUS
d1b742e74e6f    ubuntu    "/bin/bash"    3 minutes ago
Up 3 minutes    0.0.0.0:9010->80/tcp    agitated_jennings
0bfec089516f    ubuntu    "/bin/bash"    24 minutes ago
Up 24 minutes    0.0.0.0:9000->80/tcp    relaxed_boyd
2d5b0b7e5919    ubuntu    "bash"    2 hours ago
Up 2 hours    e3d9ec950bf0    ubuntu    "bash"    2 hours ago
Up 2 hours    36b5e00a9f5a    ubuntu    "bash"    3 hours ago
Up 3 hours    cranky_nightingale

docker@boot2docker:~$ docker exec -it
agitated_jennings    naughty_jennings    relaxed_boyd
cranky_nightingale    recursing_visvesvaraya
docker@boot2docker:~$ docker exec -it agitated_jennings /bin/bash
root@d1b742e74e6f:/# apt-get update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [109 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
0% [7 Packages 10.4 MB/11.3 MB 91%] 796 kB/s 1s_
```

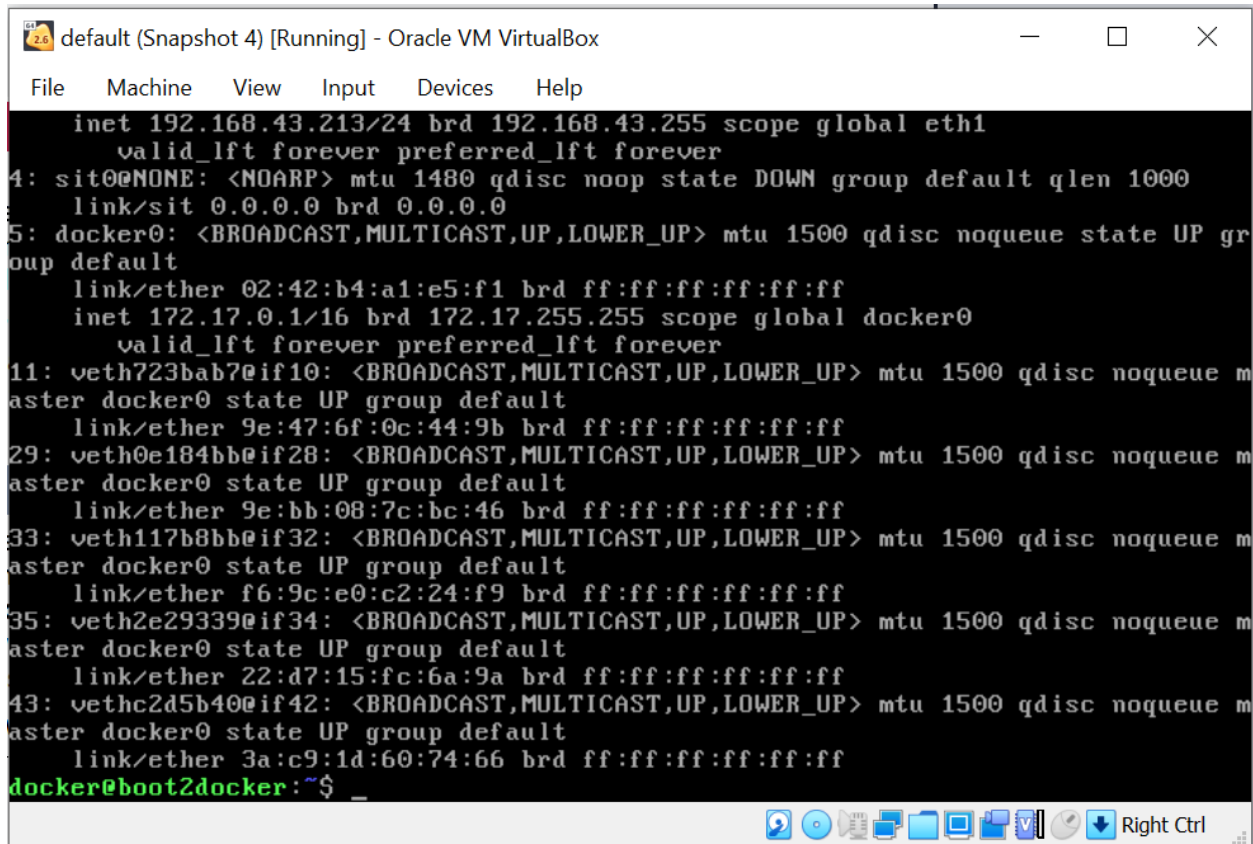
Chỉnh cấu hình adapter 2 như hình



Sử dụng câu lệnh `--sysctl -w net.ipv6.conf.all.disable_ipv6=1` disable ipv6 để máy ảo nhận ipv4

Để check ip thì mình dùng câu lệnh `apt-get install iproute2 -y`

Sau đó dùng câu lệnh `ip addr` để check ip



```
default (Snapshot 4) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
inet 192.168.43.213/24 brd 192.168.43.255 scope global eth1
    valid_lft forever preferred_lft forever
4: sit0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000
    link/sit 0.0.0.0 brd 0.0.0.0
5: docker0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
    link/ether 02:42:b4:a1:e5:f1 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
11: veth723bab7@if10: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master docker0 state UP group default
    link/ether 9e:47:6f:0c:44:9b brd ff:ff:ff:ff:ff:ff
29: veth0e184bb@if28: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master docker0 state UP group default
    link/ether 9e:bb:08:7c:bc:46 brd ff:ff:ff:ff:ff:ff
33: veth117b8bb@if32: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master docker0 state UP group default
    link/ether f6:9c:e0:c2:24:f9 brd ff:ff:ff:ff:ff:ff
35: veth2e29339@if34: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master docker0 state UP group default
    link/ether 22:d7:15:fc:6a:9a brd ff:ff:ff:ff:ff:ff
43: vethc2d5b40@if42: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master docker0 state UP group default
    link/ether 3a:c9:1d:60:74:66 brd ff:ff:ff:ff:ff:ff
docker@boot2docker:~$ _
```

Đã khởi chạy được web

