

EXPERIMENT 3

Aim: Configuration of Docker and starting its container in vagrant.

- 1) Add the GPG key for the official Docker repository to your system.
- 2) Add the Docker repository to APT sources
- 3) Next, update the package database with the Docker packages from the newly added repo:

```
vagrant@ubuntu-xenial:~$ whoami
vagrant
vagrant@ubuntu-xenial:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
OK
vagrant@ubuntu-xenial:~$ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"
vagrant@ubuntu-xenial:~$ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"
vagrant@ubuntu-xenial:~$ sudo apt-get update
Hit:1 http://archive.ubuntu.com/ubuntu xenial InRelease
Get:2 http://security.ubuntu.com/ubuntu xenial-security InRelease [109 kB]
Get:3 https://download.docker.com/linux/ubuntu xenial InRelease [66.2 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial-updates InRelease [109 kB]
Get:5 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages [15.0 kB]
Get:6 http://archive.ubuntu.com/ubuntu xenial-backports InRelease [107 kB]
Get:7 http://archive.ubuntu.com/ubuntu xenial/universe i386 Packages [7,512 kB]
Get:8 http://security.ubuntu.com/ubuntu xenial-security/main i386 Packages [1,084 kB]
Get:9 http://security.ubuntu.com/ubuntu xenial-security/universe i386 Packages [654 kB]
Get:10 http://security.ubuntu.com/ubuntu xenial-security/universe Translation-en [219 kB]
Get:11 http://security.ubuntu.com/ubuntu xenial-security/multiverse i386 Packages [8,484 B]
Get:12 http://security.ubuntu.com/ubuntu xenial-security/multiverse Translation-en [2,888 B]
Get:13 http://archive.ubuntu.com/ubuntu xenial/universe Translation-en [4,354 kB]
Get:14 http://archive.ubuntu.com/ubuntu xenial/multiverse i386 Packages [140 kB]
Get:15 http://archive.ubuntu.com/ubuntu xenial/multiverse Translation-en [106 kB]
Get:16 http://archive.ubuntu.com/ubuntu xenial-updates/main i386 Packages [1,452 kB]
Get:17 http://archive.ubuntu.com/ubuntu xenial-updates/universe i386 Packages [1,065 kB]
Get:18 http://archive.ubuntu.com/ubuntu xenial-updates/universe Translation-en [349 kB]
Get:19 http://archive.ubuntu.com/ubuntu xenial-updates/multiverse i386 Packages [21.8 kB]
Get:20 http://archive.ubuntu.com/ubuntu xenial-updates/multiverse Translation-en [8,632 B]
Get:21 http://archive.ubuntu.com/ubuntu xenial-backports/main i386 Packages [9,784 B]
Get:22 http://archive.ubuntu.com/ubuntu xenial-backports/main Translation-en [4,456 B]
Get:23 http://archive.ubuntu.com/ubuntu xenial-backports/universe i386 Packages [10.9 kB]
Get:24 http://archive.ubuntu.com/ubuntu xenial-backports/universe Translation-en [4,476 B]
Fetched 17.4 MB in 1min 16s (229 kB/s)
Reading package lists... Done
vagrant@ubuntu-xenial:~$ apt-cache policy docker-ce
docker-ce:
  Installed: (none)
  Candidate: 5:19.03.13~3-0-ubuntu-xenial
  Version table:
   5:19.03.13~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.12~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.11~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.10~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.9~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.8~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.7~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.6~3-0-ubuntu-xenial 500
```

- 4) Install from the Docker repo instead of the default Ubuntu 16.04 repo

```
vagrant@ubuntu-xenial:~$ apt-cache policy docker-ce
docker-ce:
  Installed: (none)
  Candidate: 5:19.03.13~3-0-ubuntu-xenial
  Version table:
   5:19.03.13~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.12~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.11~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.10~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.9~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.8~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.7~3-0-ubuntu-xenial 500
     500 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages
   5:19.03.6~3-0-ubuntu-xenial 500
```

```
vagrant@ubuntu-xenial:~$ sudo apt-get install -y docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  aufs-tools cgroupfs-mount containerd.io docker-ce-cli libltdl7 pigz
Suggested packages:
  mountall
The following NEW packages will be installed:
  aufs-tools cgroupfs-mount containerd.io docker-ce docker-ce-cli libltdl7 pigz
0 upgraded, 7 newly installed, 0 to remove and 3 not upgraded.
Need to get 91.2 MB of archives.
After this operation, 410 MB of additional disk space will be used.
Get:1 https://download.docker.com/linux/ubuntu xenial/stable amd64 containerd.io amd64 1.3.7-1 [24.3 MB]
Get:2 https://download.docker.com/linux/ubuntu xenial/stable amd64 docker-ce-cli amd64 5:19.03.13~3-0~ubuntu-xenial [44.2 MB]
Get:3 https://download.docker.com/linux/ubuntu xenial/stable amd64 docker-ce amd64 5:19.03.13~3-0~ubuntu-xenial [22.5 MB]
Get:4 http://archive.ubuntu.com/ubuntu xenial/universe amd64 pigz amd64 2.3.1-2 [61.1 kB]
Get:5 http://archive.ubuntu.com/ubuntu xenial/universe amd64 aufs-tools amd64 1:3.2+20130722-1.1ubuntu1 [92.9 kB]
Get:6 http://archive.ubuntu.com/ubuntu xenial/universe amd64 cgroupfs-mount all 1.2 [4,970 B]
Get:7 http://archive.ubuntu.com/ubuntu xenial/main amd64 libltdl7 amd64 2.4.6-0.1 [38.3 kB]
Fetched 91.2 MB in 26s (3,465 kB/s)
Selecting previously unselected package pigz.
(Reading database ... 54328 files and directories currently installed.)
Preparing to unpack .../pigz_2.3.1-2_amd64.deb ...
Unpacking pigz (2.3.1-2) ...
Selecting previously unselected package aufs-tools.
```

5) Checking and doing the configuration

```
vagrant@ubuntu-xenial:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2020-11-03 17:20:22 UTC; 36s ago
     Docs: https://docs.docker.com
    Main PID: 3861 (dockerd)
    CGroup: /system.slice/docker.service
            └─3861 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.414875552Z" level=warning msg="Your kernel does not support swap memory limit"
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.415581032Z" level=warning msg="Your kernel does not support cgroup rt period"
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.415962976Z" level=warning msg="Your kernel does not support cgroup rt runtime"
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.416533961Z" level=info msg="Loading containers: start."
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.519000102Z" level=info msg="Default bridge (docker0) is assigned with an IP address 172.17.0.0/16. Daemon option --bip can be used to set a
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.556669957Z" level=info msg="Loading containers: done."
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.602657825Z" level=info msg="Docker daemon" commit=4484c46d9d graphdriver(s)=overlay2 version=19.03.13
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.603497792Z" level=info msg="Daemon has completed initialization"
Nov 03 17:20:22 ubuntu-xenial dockerd[3861]: time="2020-11-03T17:20:22.623147056Z" level=info msg="API listen on /var/run/docker.sock"
Nov 03 17:20:22 ubuntu-xenial systemd[1]: Started Docker Application Container Engine.
```

6) Pulling Ubuntu

```
vagrant@ubuntu-xenial:~$ docker run ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
6a5697faee43: Pull complete
ba13d3bc422b: Pull complete
a254829d9e55: Pull complete
Digest: sha256:fff16eea1a8ae92867721d90c59a75652ea66d29c05294e6e2f898704bdb8cf1
Status: Downloaded newer image for ubuntu:latest
vagrant@ubuntu-xenial:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
vagrant@ubuntu-xenial:~$ docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
55621f3f90d3        ubuntu             "/bin/bash"        18 seconds ago     Exited (0) 16 seconds ago                                inspiring_johnson
vagrant@ubuntu-xenial:~$
```

Command Prompt

```
vagrant@ubuntu-xenial:~$ su - ${USER}
Password:
vagrant@ubuntu-xenial:~$ sudo usermod -aG docker username
usermod: user 'username' does not exist
vagrant@ubuntu-xenial:~$ sudo usermod -aG docker vagrant
vagrant@ubuntu-xenial:~$ docker run ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
6a5697faee43: Pull complete
ba13d3bc422b: Pull complete
e254829d9e55: Pull complete
Digest: sha256:fff16ee1a8ae92867721d90c59a75652ea66d29c05294e6e2f898704bdb8cf1
Status: Downloaded newer image for ubuntu:latest
vagrant@ubuntu-xenial:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
vagrant@ubuntu-xenial:~$ docker ps -a
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
55621f3f90d3        ubuntu             "/bin/bash"        18 seconds ago     Exited (0) 16 seconds ago              inspiring_johnson
vagrant@ubuntu-xenial:~$ docker run -it ubuntu
root@831f8ab2164d:/# ls
bin  boot  dev  etc  home  lib  lib32  lib64  libx32  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
root@831f8ab2164d:/# exit
exit
vagrant@ubuntu-xenial:~$ exit
logout
vagrant@ubuntu-xenial:~$ exit
logout
Connection to 127.0.0.1 closed.
```