



## **Lab Experiment – 12**

### **Configuration of docker and starting its container in vagrant**

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## Experiment for demonstrating configuration of docker and starting its container in vagrant

- In order to ensure the downloads are valid, add the GPG key for the official Docker repository to your system.

```
vagrant@ubuntu-xenial:~$ ls
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 apt-get update
Hit:1 http://archive.ubuntu.com/ubuntu xenial InRelease
Get:2 http://archive.ubuntu.com/ubuntu xenial-updates InRelease [109 kB]
Get:3 http://archive.ubuntu.com/ubuntu xenial-backports InRelease [107 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial/universe amd64 Packages [7,532 kB]
Get:5 http://security.ubuntu.com/ubuntu xenial-security InRelease [109 kB]
Get:6 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [1,477 kB]
Get:7 https://download.docker.com/linux/ubuntu xenial InRelease [66.2 kB]
Get:8 https://download.docker.com/linux/ubuntu xenial/stable amd64 Packages [15.0 kB]
Get:9 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages [774 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 amd64 Packages [8,236 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 amd64 Packages [144 kB]
Get:15 http://archive.ubuntu.com/ubuntu xenial/multiverse Translation-en [106 kB]
Get:16 http://archive.ubuntu.com/ubuntu xenial-updates/main amd64 Packages [1,880 kB]
Get:17 http://archive.ubuntu.com/ubuntu xenial-updates/universe amd64 Packages [1,195 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 amd64 Packages [23.0 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 amd64 Packages [9,812 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 amd64 Packages [11.3 kB]
Get:24 http://archive.ubuntu.com/ubuntu xenial-backports/universe Translation-en [4,476 B]
Fetched 18.5 MB in 1min 11s (258 kB/s)
Reading package lists... Done
```

- Add the Docker repository to sources and update the policy.

```
❏ Select vagrant@ubuntu-xenial: ~
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
```

- Install the docker to start docker services in the system.

```
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 http://archive.ubuntu.com/ubuntu xenial/universe amd64 pigz amd64 2.3.1-2 [61.1 kB]
Get:2 https://download.docker.com/linux/ubuntu xenial/stable amd64 containerd.io amd64 1.3.7-1 [24.3 MB]
Get:3 http://archive.ubuntu.com/ubuntu xenial/universe amd64 aufs-tools amd64 1:3.2+20130722-1.1ubuntu1 [92.9 kB]
Get:4 http://archive.ubuntu.com/ubuntu xenial/universe amd64 cgroupfs-mount all 1.2 [4,970 B]
Get:5 http://archive.ubuntu.com/ubuntu xenial/main amd64 libltdl7 amd64 2.4.6-0.1 [38.3 kB]
Get:6 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:7 https://download.docker.com/linux/ubuntu xenial/stable amd64 docker-ce amd64 5:19.03.13~3-0~ubuntu-xenial [22.5 MB]
Fetched 91.2 MB in 5min 17s (287 kB/s)
Selecting previously unselected package pigz.
(Reading database ... 54320 files and directories currently installed.)
```

- Verify that docker services has been successfully configured and is in running state or not using “systemctl status docker” command.

```
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 Fri 2020-11-06 06:48:42 UTC; 32s ago
     Docs: https://docs.docker.com
    Main PID: 4106 (dockerd)
    CGroup: /system.slice/docker.service
            └─4106 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Nov 06 06:48:41 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:41.780368119Z" level=warning msg="Your kernel does not support container memory swap feature (disabling...)"
Nov 06 06:48:41 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:41.780612537Z" level=warning msg="Your kernel does not support cgroup swap limit"
Nov 06 06:48:41 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:41.780731650Z" level=warning msg="Your kernel does not support cgroup rt limit"
Nov 06 06:48:41 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:41.780961091Z" level=info msg="Loading containers: start."
Nov 06 06:48:42 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:42.084854382Z" level=info msg="Default bridge (docker0) is already up. To help you segregate your network, we are configuring docker0 with IPv4 address 172.17.0.1/16"
Nov 06 06:48:42 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:42.155816926Z" level=info msg="Loading containers: done."
Nov 06 06:48:42 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:42.257330600Z" level=info msg="Docker daemon" commit=4484c46
Nov 06 06:48:42 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:42.257411200Z" level=info msg="Daemon has completed initialization"
Nov 06 06:48:42 ubuntu-xenial systemd[1]: Started Docker Application Container Engine.
Nov 06 06:48:42 ubuntu-xenial dockerd[4106]: time="2020-11-06T06:48:42.272954645Z" level=info msg="API listen on /var/run/docker.sock"
```

- Creating a user for using docker services through vagrant and setting password to that user.

```
vagrant@ubuntu-xenial: ~
vagrant@ubuntu-xenial:~$ sudo usermod -aG docker ${USER}
vagrant@ubuntu-xenial:~$ su - ${USER}
Password:
vagrant@ubuntu-xenial:~$ sudo usermod -aG docker vagrant
vagrant@ubuntu-xenial:~$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED
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- Using the “docker run -dit --name linuxos ubuntu” to launch Ubuntu Linux container to perform any task with detached interactive-terminal and with name ‘linuxos’ and checking if the container runs or not via “docker ps” command.

```
vagrant@ubuntu-xenial:~$ docker run -dit --name linuxos 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
4b7cbc2bbf4ec6d6b87e36927ed5ae6d36963048f6c4a86a94d6d66d02873e9d
vagrant@ubuntu-xenial:~$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
4b7cbc2bbf4e	ubuntu	"/bin/bash"	25 seconds ago	Up

- Now we can also attach the terminal to run basic linux commands or run any application inside it and exiting the container after the work is done.

```
vagrant@ubuntu-xenial:~$ docker attach linuxos
root@4b7cbc2bbf4e:/# date
Fri Nov 6 06:58:28 UTC 2020
root@4b7cbc2bbf4e:/# cal
bash: cal: command not found
root@4b7cbc2bbf4e:/# ls
bin boot dev etc home lib lib32 lib64 libx32
root@4b7cbc2bbf4e:/# exit
exit
```