Exercise 1. Installing Docker on Linux

Installing Docker on Linux

Estimated time

01:00 hour

What this exercise is about

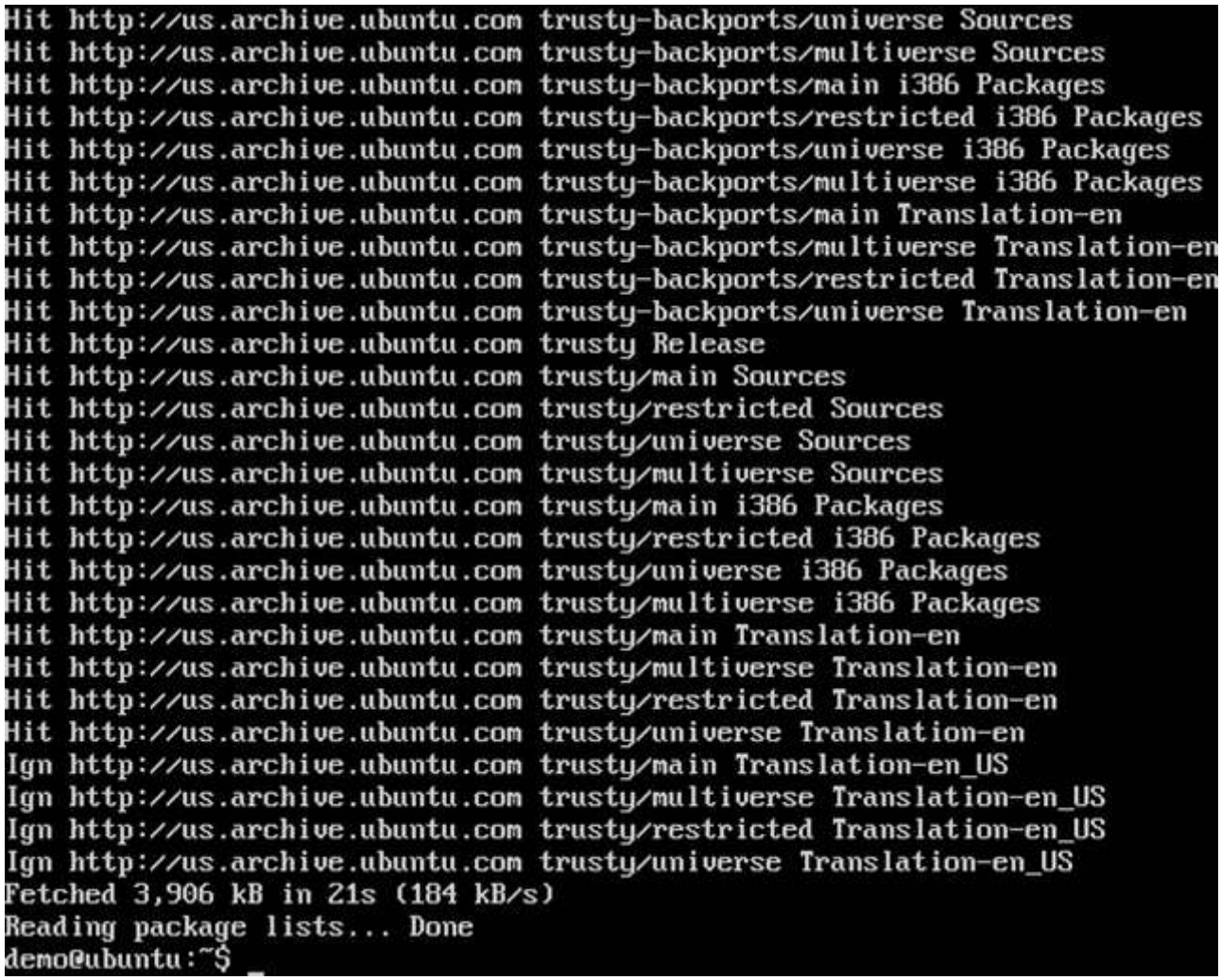
This lab exercise covers the process of installing Installing Docker on Linux

What you should be able to do

At the end of the exercise, you should be able to:

Installing Docker on Linux

The following screenshot shows a simple Ubuntu server which has been installed on Oracle Virtual Box. There is an OS user named demo which has been defined on the system having entire root access to the sever.



To install Docker, we need to follow the steps given below.

Step 1: Before installing Docker, you first have to ensure that you have the right Linux kernel version running. Docker is only designed to run on Linux kernel version 3.8 and higher. We can do this by running the following command.

uname

This method returns the system information about the Linux system.

Syntax

uname -a

Options

a − This is used to ensure that the system information is returned.

Return Value

This method returns the following information on the Linux system:

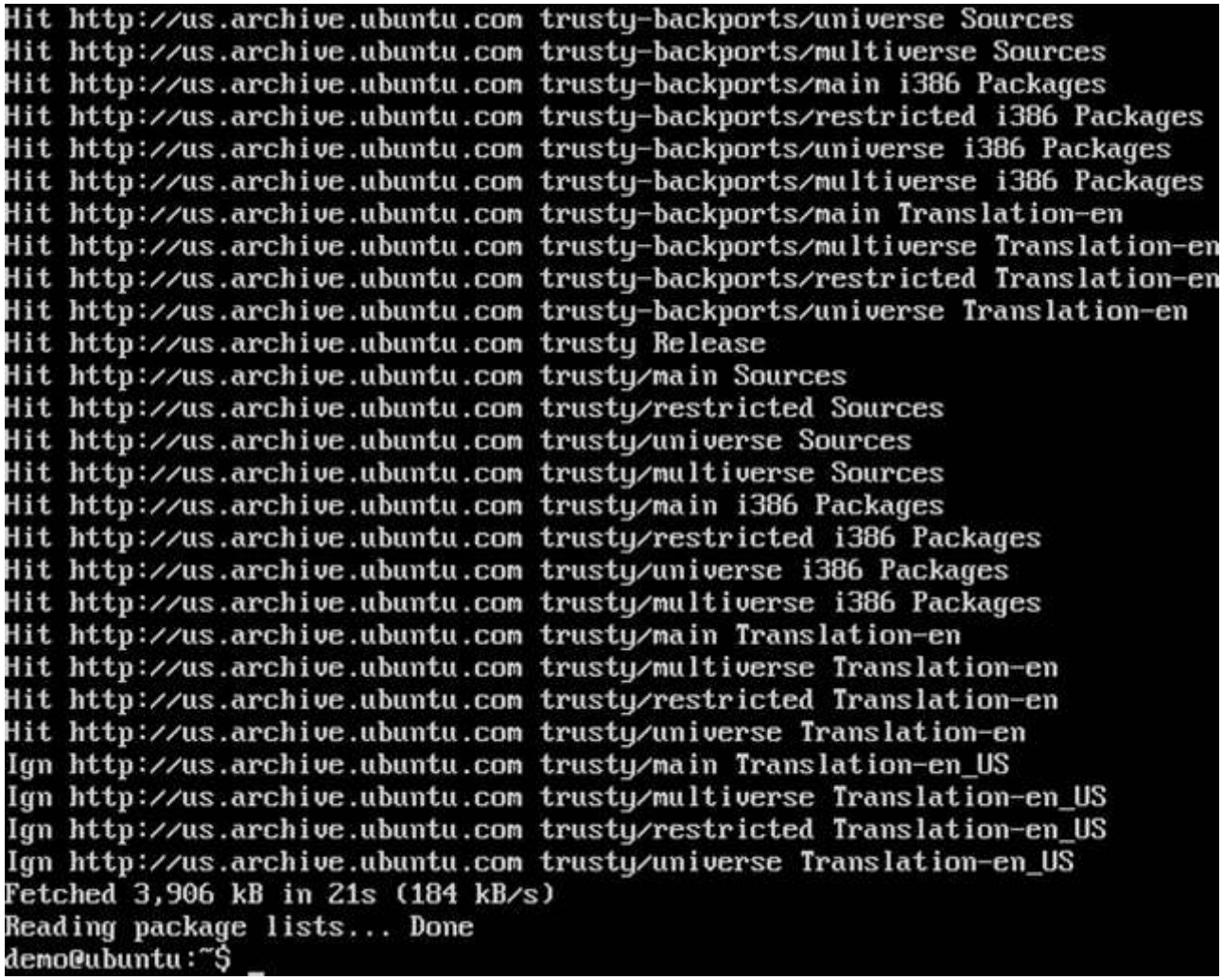
- kernel name
- node name
- kernel release
- kernel version
- machine
- processor
- hardware platform
- operating system

Example

uname –a

Output

When we run above command, we will get the following result −



From the output, we can see that the Linux kernel version is 4.2.0-27 which is higher than version 3.8, so we are good to go.

Step 2: You need to update the OS with the latest packages, which can be done via the following command

apt-get

This method installs packages from the Internet on to the Linux system.

Syntax

sudo apt-get update

Options

- sudo − The sudo command is used to ensure that the command runs with root access.
- update − The update option is used ensure that all packages are updated on the Linux system.

Return value

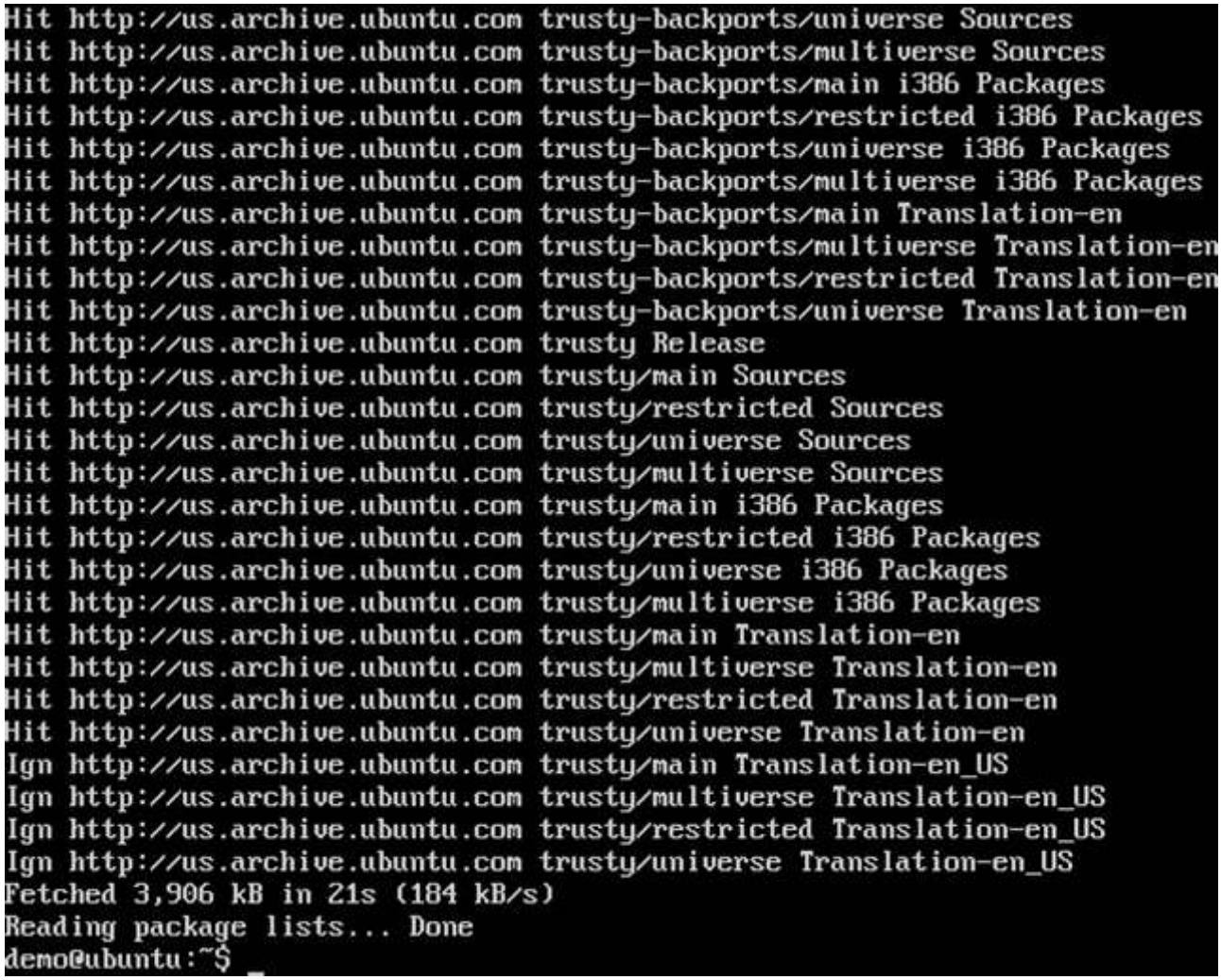
None

Example

sudo apt-get update

Output

When we run the above command, we will get the following result :



This command will connect to the internet and download the latest system packages for Ubuntu.

Step 3: The next step is to install the necessary certificates that will be required to work with the Docker site later on to download the necessary Docker packages. It can be done with the following command.

sudo apt-get install apt-transport-https ca-certificates

```
demo@ubuntudemo:~$ sudo apt-get install apt-transport-https ca-certificates
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages will be upgraded:
  apt-transport-https ca-certificates
2 upgraded, 0 newly installed, 0 to remove and 105 not upgraded.
Need to get 215 kB of archives.
After this operation, 8,192 B disk space will be freed.
Get:1 http://us.archive.ubuntu.com/ubuntu/ trusty-updates/main apt-transport-ht
ps amd64 1.0.1ubuntu2.15 [25.0 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu/ trusty-updates/main ca-certificates
ll 20160104ubuntu0.14.04.1 [190 kB]
Fetched 215 kB in 1s (152 kB/s)
Preconfiguring packages ...
(Reading database ... 57694 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_1.0.1ubuntu2.15_amd64.deb ...
Unpacking apt-transport-https (1.0.1ubuntu2.15) over (1.0.1ubuntu2.11) ...
Preparing to unpack .../ca-certificates_20160104ubuntu0.14.04.1_all.deb ...
Unpacking ca-certificates (20160104ubuntu0.14.04.1) over (20141019ubuntu0.14.04
1) ...
Processing triggers for man-db (2.6.7.1-1ubuntu1) ...
Setting up apt-transport-https (1.0.1ubuntu2.15) ...
Setting up ca-certificates (20160104ubuntu0.14.04.1) ...
Processing triggers for ca-certificates (20160104ubuntu0.14.04.1) ...
Updating certificates in /etc/ssl/certs... 19 added, 19 removed; done.
Running hooks in /etc/ca-certificates/update.d....done.
demo@ubuntudemo:~$
```

Step 4: The next step is to add the new GPG key. This key is required to ensure that all data is encrypted when downloading the necessary packages for Docker. The following command will download the key with the ID 58118E89F3A912897C070ADBF76221572C52609D from the keyserver hkp://ha.pool.sks-keyservers.net:80 and adds it to the adv keychain. Please note that this particular key is required to download the necessary Docker packages.

```
demo@ubuntudemo:~$ sudo apt-key adv \ --keyserver hkp://ha.pool.sks-keyservers.
et:80 \ --recv-keys 58118E89F3A912897C070ADBF76221572C52609D
Executing: gpg --ignore-time-conflict --no-options --no-default-keyring --homed
r /tmp/tmp.Kca23WlmGt --no-auto-check-trustdb --trust-model always --keyring /e
c/apt/trusted.gpg --primary-keyring /etc/apt/trusted.gpg  --keyserver hkp://ha.
ool.sks-keyservers.net:80  --recv-keys 58118E89F3A912897C070ADBF76221572C52609D
gpg: requesting key 2C52609D from hkp server ha.pool.sks-keyservers.net
gpg: key 2C52609D: public key "Docker Release Tool (releasedocker) <docker@dock
r.com>" imported
gpg: Total number processed: 1
gpg:               imported: 1  (RSA: 1)
demo@ubuntudemo:~$
```

Step 5: Next, depending on the version of Ubuntu you have, you will need to add the relevant site to the docker.list for the apt package manager, so that it will be able to detect the Docker packages from the Docker site and download them accordingly.

- Precise 12.04 (LTS) — deb https://apt.dockerproject.org/repoubuntu-precise main
- Trusty 14.04 (LTS) — deb https://apt.dockerproject.org/repo/ ubuntu-trusty main
- Wily 15.10 — deb https://apt.dockerproject.org/repo ubuntu-wily main

- Xenial 16.04 (LTS) - https://apt.dockerproject.org/repo ubuntu-xenial main

Since our OS is Ubuntu 14.04, we will use the Repository name as “deb https://apt.dockerproject.org/repoubuntu-trusty main”.

And then, we will need to add this repository to the docker.list as mentioned above.

echo "deb https://apt.dockerproject.org/repo ubuntu-trusty main”

| sudo tee /etc/apt/sources.list.d/docker.list

```
demo@ubuntudemo:~$ echo "deb https://apt.dockerproject.org/repo ubuntu-trusty
in" | sudo tee /etc/apt/sources.list.d/docker.list
deb https://apt.dockerproject.org/repo ubuntu-trusty main
demo@ubuntudemo:~$ _
```

Step 6: Next, we issue the apt-get update command to update the packages on the Ubuntu system.

```
Hit http://us.archive.ubuntu.com trusty-backports/main Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/multiverse Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/restricted Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/universe Translation-en
Hit http://us.archive.ubuntu.com trusty Release
Hit http://us.archive.ubuntu.com trusty/main Sources
Hit http://us.archive.ubuntu.com trusty/restricted Sources
Hit http://us.archive.ubuntu.com trusty/universe Sources
Hit http://us.archive.ubuntu.com trusty/multiverse Sources
Hit http://us.archive.ubuntu.com trusty/main amd64 Packages
Hit http://us.archive.ubuntu.com trusty/restricted amd64 Packages
Hit http://us.archive.ubuntu.com trusty/universe amd64 Packages
Hit http://us.archive.ubuntu.com trusty/multiverse amd64 Packages
Hit http://us.archive.ubuntu.com trusty/main i386 Packages
Hit http://us.archive.ubuntu.com trusty/restricted i386 Packages
Hit http://us.archive.ubuntu.com trusty/universe i386 Packages
Hit http://us.archive.ubuntu.com trusty/multiverse i386 Packages
Hit http://us.archive.ubuntu.com trusty/main Translation-en
Hit http://us.archive.ubuntu.com trusty/multiverse Translation-en
Hit http://us.archive.ubuntu.com trusty/restricted Translation-en
Hit http://us.archive.ubuntu.com trusty/universe Translation-en
Ign http://us.archive.ubuntu.com trusty/main Translation-en_US
Ign http://us.archive.ubuntu.com trusty/multiverse Translation-en_US
Ign http://us.archive.ubuntu.com trusty/restricted Translation-en_US
Ign http://us.archive.ubuntu.com trusty/universe Translation-en_US
Fetched 3,333 kB in 36s (90.8 kB/s)
Reading package lists... Done
demo@ubuntudemo:~$
```

Step 7: If you want to verify that the package manager is pointing to the right repository, you can do it by issuing the apt-cache command.

apt-cache policy docker-engine. In the output, you will get the link to https://apt.dockerproject.org/repo/

```
Hit http://us.archive.ubuntu.com trusty-backports/main Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/multiverse Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/restricted Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/universe Translation-en
Hit http://us.archive.ubuntu.com trusty Release
Hit http://us.archive.ubuntu.com trusty/main Sources
Hit http://us.archive.ubuntu.com trusty/restricted Sources
Hit http://us.archive.ubuntu.com trusty/universe Sources
Hit http://us.archive.ubuntu.com trusty/multiverse Sources
Hit http://us.archive.ubuntu.com trusty/main amd64 Packages
Hit http://us.archive.ubuntu.com trusty/restricted amd64 Packages
Hit http://us.archive.ubuntu.com trusty/universe amd64 Packages
Hit http://us.archive.ubuntu.com trusty/multiverse amd64 Packages
Hit http://us.archive.ubuntu.com trusty/main i386 Packages
Hit http://us.archive.ubuntu.com trusty/restricted i386 Packages
Hit http://us.archive.ubuntu.com trusty/universe i386 Packages
Hit http://us.archive.ubuntu.com trusty/multiverse i386 Packages
Hit http://us.archive.ubuntu.com trusty/main Translation-en
Hit http://us.archive.ubuntu.com trusty/multiverse Translation-en
Hit http://us.archive.ubuntu.com trusty/restricted Translation-en
Hit http://us.archive.ubuntu.com trusty/universe Translation-en
Ign http://us.archive.ubuntu.com trusty/main Translation-en_US
Ign http://us.archive.ubuntu.com trusty/multiverse Translation-en_US
Ign http://us.archive.ubuntu.com trusty/restricted Translation-en_US
Ign http://us.archive.ubuntu.com trusty/universe Translation-en_US
Fetched 3,333 kB in 36s (90.8 kB/s)
Reading package lists... Done
demo@ubuntudemo:~$
```

Step 8: Issue the apt-get update command to ensure all the packages on the local system are up to date.

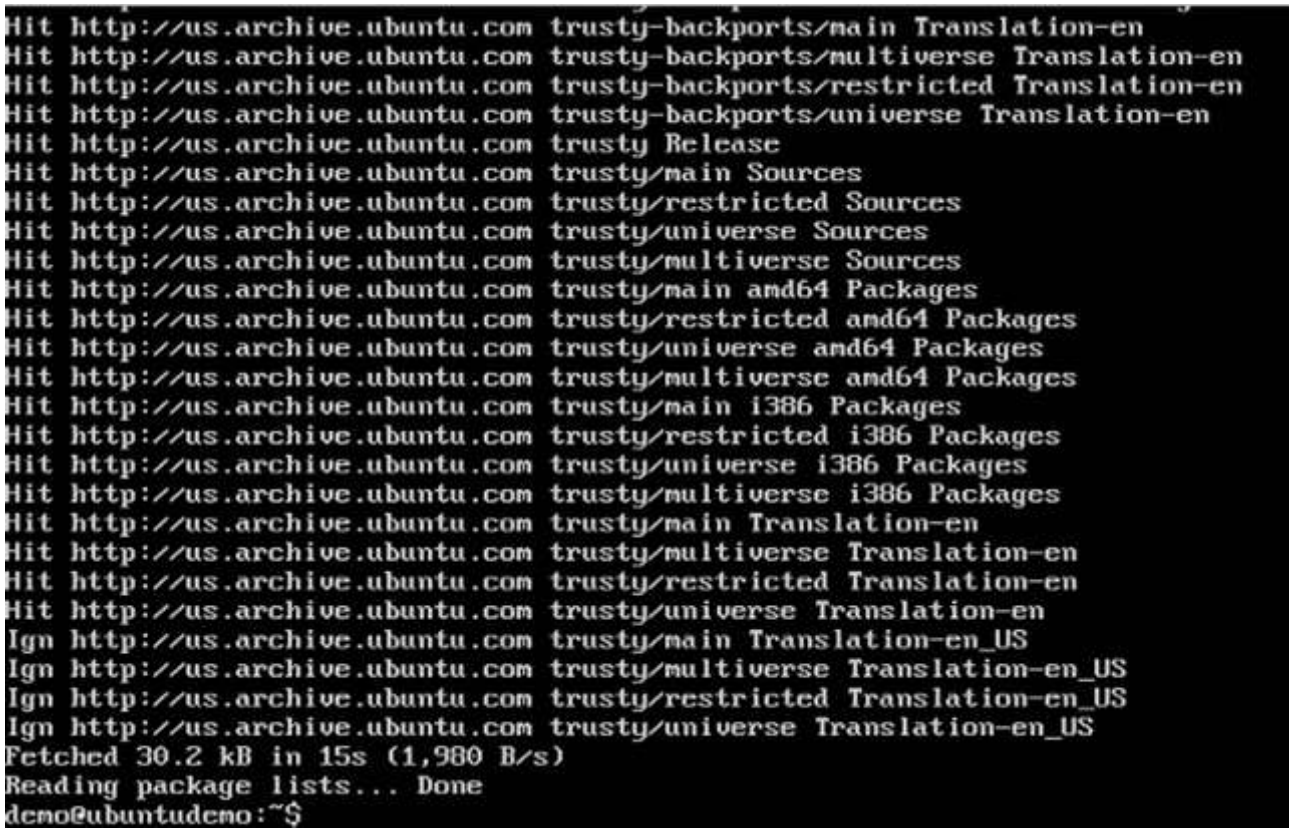
```
Hit http://us.archive.ubuntu.com trusty-backports/main Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/multiverse Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/restricted Translation-en
Hit http://us.archive.ubuntu.com trusty-backports/universe Translation-en
Hit http://us.archive.ubuntu.com trusty Release
Hit http://us.archive.ubuntu.com trusty/main Sources
Hit http://us.archive.ubuntu.com trusty/restricted Sources
Hit http://us.archive.ubuntu.com trusty/universe Sources
Hit http://us.archive.ubuntu.com trusty/multiverse Sources
Hit http://us.archive.ubuntu.com trusty/main amd64 Packages
Hit http://us.archive.ubuntu.com trusty/restricted amd64 Packages
Hit http://us.archive.ubuntu.com trusty/universe amd64 Packages
Hit http://us.archive.ubuntu.com trusty/multiverse amd64 Packages
Hit http://us.archive.ubuntu.com trusty/main i386 Packages
Hit http://us.archive.ubuntu.com trusty/restricted i386 Packages
Hit http://us.archive.ubuntu.com trusty/universe i386 Packages
Hit http://us.archive.ubuntu.com trusty/multiverse i386 Packages
Hit http://us.archive.ubuntu.com trusty/main Translation-en
Hit http://us.archive.ubuntu.com trusty/multiverse Translation-en
Hit http://us.archive.ubuntu.com trusty/restricted Translation-en
Hit http://us.archive.ubuntu.com trusty/universe Translation-en
Ign http://us.archive.ubuntu.com trusty/main Translation-en_US
Ign http://us.archive.ubuntu.com trusty/multiverse Translation-en_US
Ign http://us.archive.ubuntu.com trusty/restricted Translation-en_US
Ign http://us.archive.ubuntu.com trusty/universe Translation-en_US
Fetched 30.2 kB in 15s (1,980 B/s)
Reading package lists... Done
demo@ubuntudemo:~$
```

Step 9: For Ubuntu Trusty, Wily, and Xenial, we have to install the linux-image-extra-* kernel packages, which allows one to use the aufs storage driver. This driver is used by the newer versions of Docker.

It can be done by using the following command.

sudo apt-get install linux-image-extra-$(uname -r)

linux-image-extra-virtual



Step 10: The final step is to install Docker and we can do this with the following command:

sudo apt-get install –y docker-engine

Here, apt-get uses the install option to download the Docker-engine image from the Docker website and get Docker installed.

The Docker-engine is the official package from the Docker Corporation for Ubuntu-based systems.

In the next section, we will see how to check for the version of Docker that was installed.

Docker version

To see the version of Docker running, you can issue the following command:

Syntax

docker version

Options

version − It is used to ensure the Docker command returns the Docker version installed.

Return Value

The output will provide the various details of the Docker version installed on the system.

Example

sudo docker version

Output

When we run the above program, we will get the following result.

Docker Info

To see more information on the Docker running on the system, you can issue the following command:

Syntax

docker info

Options

info − It is used to ensure that the Docker command returns the detailed information on the Docker service installed.

Return Value

The output will provide the various details of the Docker installed on the system such as −

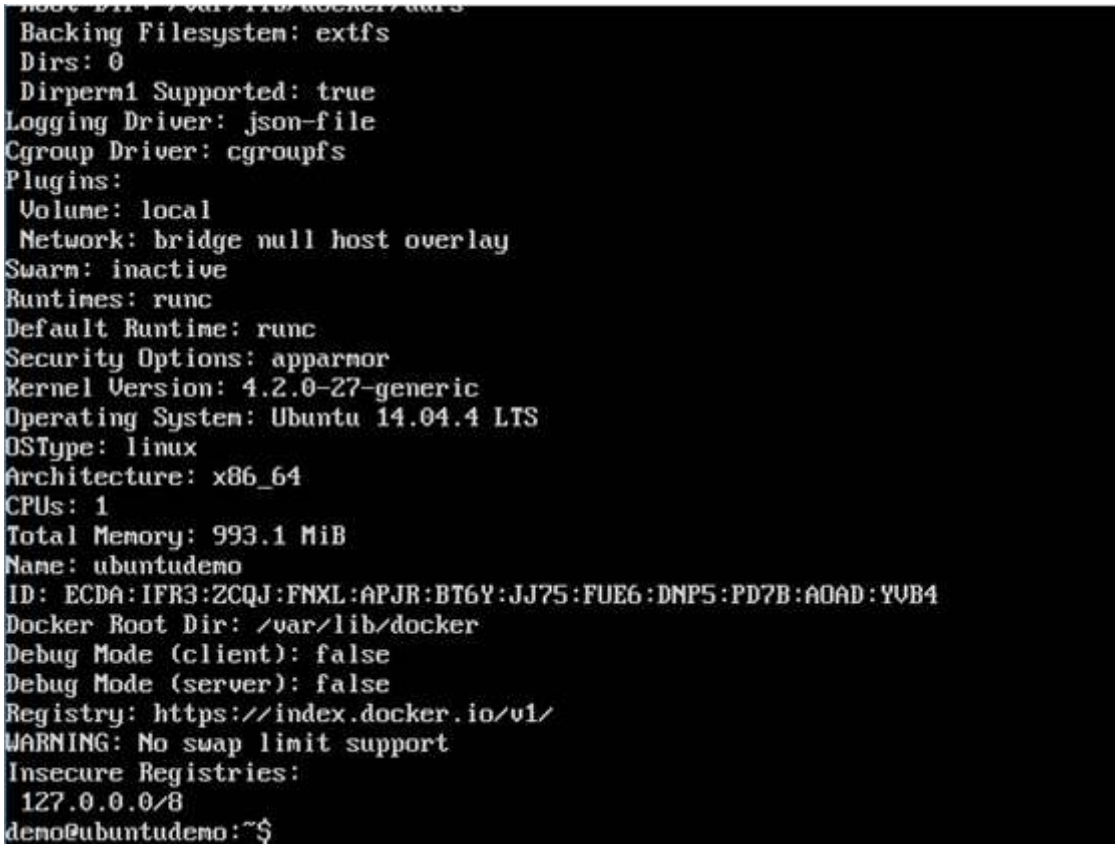
- Number of containers.
- Number of images.
- The storage driver used by Docker.
- The root directory used by Docker.
- The execution driver used by Docker.

Example

sudo docker info

Output

When we run the above command, we will get the following result:



End of exercise.