**Docker is an application that makes it simple and easy to run application processes in a container, which are like virtual machines, only more portable, more resource-friendly, and more dependent on the host operating system.**

**Docker Explained: Reasons to use Containers**

**Following are the reasons to use containers:**

**\*\* Containers have no guest OS and use the host’s operating system. So, they share relevant libraries & resources as and when needed.**

**\*\* Processing and execution of applications are very fast since applications specific binaries and libraries of containers run on the host kernel.**

**\*\* Booting up a container takes only a fraction of a second, and also containers are lightweight and faster than Virtual Machines.**

**\*\* Docker is a platform for developers and sysadmins to develop, deploy, and run applications with containers.This is often described as containerization. Putting applications into containers leads to several**

**advantages:**

**Docker containers are always portable. This means that you can build containers locally and deploycontainers to any docker environment (other computers, servers, cloud, etc …)**

**Containers are lightweight because containers are sharing the host kernel (the host operating system)but can also handle the most complex applications**

**Containers are stackable, services can be stacked vertically and on-the-fly.**

**Step 1 — Installing Docker**

**First, update your existing list of packages:**

sudo apt update

**Next, install a few prerequisite packages which let apt use packages over HTTPS:**

**sudo apt install apt-transport-https ca-certificates curl software-properties-common**

**Then add the GPG key for the official Docker repository to your system:**

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -

**Add the Docker repository to APT sources:**

sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu bionic stable"

sudo apt update

**Finally, install Docker:**

apt install docker-ce

systemctl status docker

**Using the Docker Command**

**To view all available subcommands, type:**

docker

**To view system-wide information about Docker, use:**

docker info

**Working with Docker Images**

**You can search for images available on Docker Hub by using the docker command with the**

**search subcommand. For example, to search for the Ubuntu image, type:**

docker search ubuntu

**OR if you want to search for centos, type:**

docker search centos

**Execute the following command to download the official ubuntu image to your computer:**

docker pull ubuntu

**To see the images that have been downloaded to your computer, type:**

docker images

*REPOSITORY TAG IMAGE ID CREATED SIZE*

*ubuntu latest 113a43faa138 4 weeks ago 81.2MB*

**Running a Docker Container**

**As an example, let's run a container using the latest image of Ubuntu. The combination of**

**the -i and -t switches gives you interactive shell access into the container:**

docker run -it ubuntu

*Output*

root@d9b100f2f636:/#

**Now you can run any command inside the container. For example, let's update the package databaseinside the container. You don't need to prefix any command with sudo, because you're operating insidethe container as the root user:**

root@d9b100f2f636:/# apt update

root@d9b100f2f636:/# apt install apache

**Any changes you make inside the container only apply to that container.**

**To exit the container, type exit at the prompt.**

**Managing Docker Containers**

**After using Docker for a while, you'll have many active (running) and inactive containers on**

**your computer. To view the active ones, use:**

docker ps

*output*

d9b100f2f636 ubuntu "/bin/bash" About an hour ago Exited (0) 8 minutes ago sharp\_volhard

**How to move Docker container to another host**

**Exporting a container means creating a compressed file from the container’s file system.**

**The exported file is saved as a ‘gzip’ file.**

docker export container-name | gzip > container-name.gz

**This compressed file is then copied over to the new host via file transfer tools such as scp or rsync.**

**In the new host, this gzip file is then imported into a new container.**

zcat container-name.gz | docker import - container-name

**The new container created in the new host can be accessed using ‘docker run’ command.**

**One drawback of export tool is that, it does not copy ports and variables, or the underlying**

**data volume which contains the container data.**

**This can lead to errors when trying to load the container in another host. In such cases,**

**we opt for Docker image migration to move containers from one host to another.**