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Docker Installation

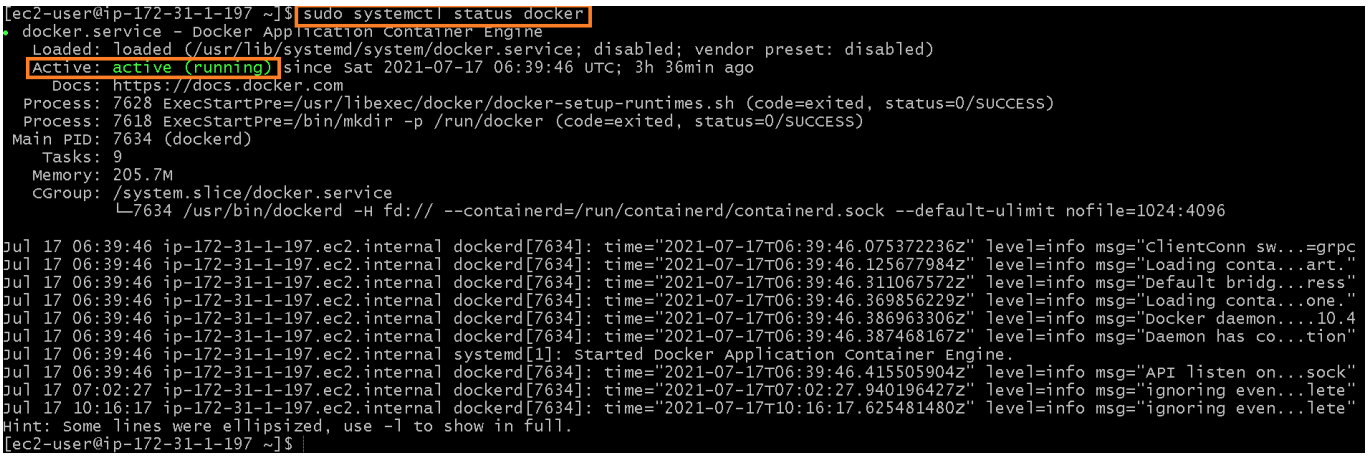
Install Docker on EC2 (Manually)

- Create a simple EC2 instance with Amazon Linux 2 and execute these commands after you SSH into it.

```
sudo yum update -y
sudo amazon-linux-extras install docker
docker -v
```

- Above commands will install Docker Server, Start the docker service.
- Start the docker service and verify the status of Docker Daemon

```
sudo systemctl start docker
sudo systemctl status docker
```



- After installation of docker service, a Linux Group `docker` is created.
- Add `ec2-user` to the docker group to execute the docker commands in linux with `ec2-user`

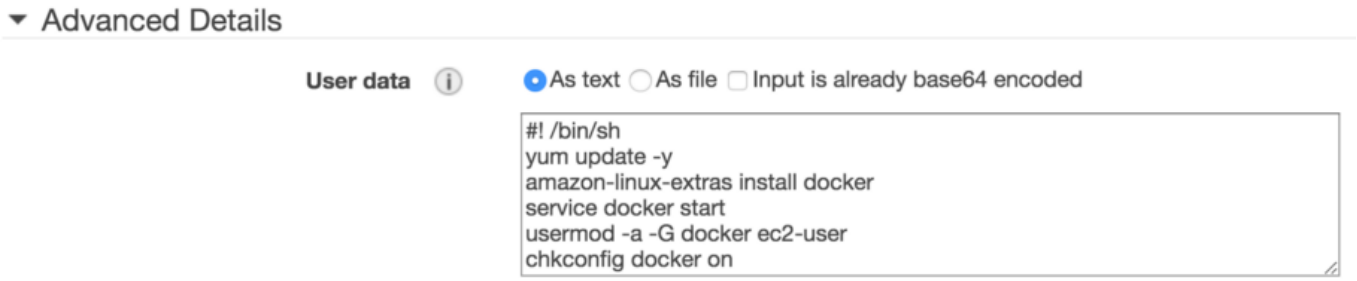
```
docker info
cat /etc/group | grep docker
sudo usermod -a -G docker ec2-user
cat /etc/group | grep docker
docker info
```

- Logout from the EC2 instance and log back in or restart the ssh session and execute `docker info`

Install Docker on EC2 (via EC2 User data)

- Below script can be passed via EC2 User Data while creating the EC2 Instance in Step **Configure Instance Details**

```
#! /bin/sh
yum update -y
amazon-linux-extras install docker
service docker start
usermod -a -G docker ec2-user
chkconfig docker on
```



> User data script might take some time to execute and make Docker CLI ready to use.

Docker Commands

```
docker info
docker images
docker pull ubuntu:18.04
docker images
docker pull amazonlinux
# starts a container, allocates a pseudo-TTY connected to the container's stdin,
and creates an interactive bash shell in the container.
docker run -i -t ubuntu /bin/bash
docker run -i -t ubuntu:18.04 /bin/bash
docker run -i -t ubuntu:20.04 /bin/bash
docker run -i -t amazonlinux:latest /bin/bash

docker images
```

> In the first `docker run` command above the default tag used is `latest`.

- Search for Docker Image in Docker Hub Registry

```
docker search nginx
```

- Connect to docker interactively

```
docker run -i -t ubuntu:20.04 /bin/bash
docker run --name=myUbuntuContainer -i -t ubuntu:20.04 /bin/bash
```

- The above command will run container with image specified, if image is not present locally it will download it using `docker pull`
- Run below commands inside the docker container bash shell

```
hostname
id
echo $HOME
pwd
```

- Detach docker from interactive container, we can detach it from our container by using the `Ctrl + P and Ctrl + Q` escape sequence. This escape sequence will detach the TTY from the container and land us in the Docker host prompt $, however the container will continue to run.

Starting and Stopping Containers

- Start a container

```
docker start [CONTAINER]
```

- Stop a running container

```
#Stop the container - docker stop <CONTAINER_ID> OR docker stop <CONTAINER_NAME>
sudo docker ps -a
sudo docker stop ContainerID
sudo docker ps -a
```

- Stop a running container and start it up again

```
docker restart [CONTAINER]
```

- Attach local standard input, output, and error streams to a running container

```
docker attach [CONTAINER]
```

- Run below commands in EC2 linux shell

```
sudo docker ps
sudo docker ps --no-trunc
```

- Below is the information for the details related to `docker ps` command
    - `CONTAINER ID`: This shows the container ID associated with the container.
    - `IMAGE`: This shows the image from which the Docker container has been created.
    - `COMMAND`: This shows you the command executed during the container launch.
    - `CREATED`: Time when the container was created.
    - `STATUS`: Current status of the container.
    - `PORTS`: This tells you if any port has been assigned to the container.
    - `NAMES`: The Docker engine auto-generates a random container name by concatenating an adjective and a noun. Either the container ID or its name can be used to take further action on the container. The container name can be manually configured by using the `--name` option in the docker run subcommand.
- Connect back to container prompt, replace below `CONTAINER_ID` with actual container id value also `CONTAINER_NAME` with actual container name.

```
sudo docker attach CONTAINER_ID
OR
sudo docker attach CONTAINER_NAME
```

- Track the changes inside the containers, connect into shell of the docker and create some directories and files inside the container.

```
sudo docker run -i -t ubuntu:18.04 /bin/bash
cd /home
ls -al
touch file{1..5}
touch {f1.txt,f2.txt,f3.txt}
ls -al
```

- Use docker diff command to check the changes made inside the container

```
sudo docker ps
sudo docker diff ContainerID
```