Setup a local docker registry (insecure)

- Pull the registry image from docker hub by running `docker pull registry`
- Run a container of this image

  `docker container run -d -p 5000:5000 --name simple_registry  registry`
- Check in the browser http://127.0.0.1:5000/v2/_catalog or http://localhost:5000/v2/_catalog
- Now you can inspect the Container

  `docker container inspect <container>`

  You will see volume attached with this container here `/var/lib/registry`

```
.
.
.
"Mounts": [
            {
                "Type": "volume",
                "Name":
"5ae483d077d9113b246b08e2a6d8b2afe800a23912c234d52f5b0fed202101e9",
                "Source":
"/var/lib/docker/volumes/5ae483d077d9113b246b08e2a6d8b2afe800a23912c234d52f5
b0fed202101e9/_data",
                "Destination": "/var/lib/registry",
                "Driver": "local",
                "Mode": "",
                "RW": true,
                "Propagation": ""
            }
        ],
.
.
.
```

  if somehow this container stops, then spin up a new container of the image and give this mount point `/var/lib/registry` to that container. so that you can retrieve the data/images of the container.
- Push some images to your local docker registry
  1. give a new tag name the image with `localhost:5000/` prefix

     `sudo docker image tag ubuntu:latest localhost:5000/ubuntu`
  2. Push this image to the local docker registry

     `sudo docker push localhost:5000/ubuntu`
- check the browser refresh.

  http://localhost:5000/v2/_catalog
- By default docker will only allow secure registry.

  But this is exception for this subnet 127.0.0.0/8 CIDR.

  You can't push or pull if your IP range differ from this range.

for my system's IP *ifconfig* 192.168.123.136 (this is insecure)

for this IP we need to add this then only we can push or pull...

1. cd /etc/docker/
2. Create a file daemon.json
3. Give the server IP

```
{
    "insecure-registries" : ["192.168.123.136:5000"]
}
```

Setup a Secure docker registry (certificate based)

- Create certificates and store the certificates.
- For that create a directory certs.

```
mkdir certs
```

```
openssl req -newkey rsa:4096 -nodes -sha256 -keyout certs/domain.key -x509 -
days 365 -out certs/domain.crt
```

-

- After hitting above cert gen code in in command line you need to enter some details.
  so press enter for all the fields but in Common Name :
  `Common Name (e.g. server FQDN or YOUR name) []:repo.docker.local`

  anyone else who will be accessing the registry he should access it at `repo.docker.local` url otherwise it will not be accessible.
- And now follow these steps...

```
    cd /etc/docker/
    mkdir certs.d

    cd certs.d/
    mkdir repo.docker.local:5000

    cp certs/domain.crt /etc/docker/certs.d/repo.docker.local\:5000/ca.crt
```

- **restart docker service...**

  `servce docker restart`
- **Start the container...**

```
docker container run -d -p 5000:5000 --name secure_registry -v
$(pwd)/certs/:/certs -e REGISTRY_HTTP_TLS_CERTIFICATE=/certs/domain.crt -e
REGISTRY_HTTP_TLS_KEY=/certs/domain.key registry
```

- Rename tag to push the image.

  `sudo docker tag ubuntu repo.docker.local:5000/ubuntu`

- Push the image.

  `docker image push repo.docker.local:5000/ubuntu`

  you will see...

  ```
  Got permission denied while trying to connect to the Docker daemon socket at
  unix:///var/run/docker.sock: Post
  http://%2Fvar%2Frun%2Fdocker.sock/v1.40/images/repo.docker.local:5000/ubuntu
  /push?tag=: dial unix /var/run/docker.sock: connect: permission denied
  ```

  because this doesn't resolve this name repo.docker.local

  so for this we need to add <ip_addr> repo.docker.local in `/etc/hosts`

  add this `192.168.123.136 repo.docker.local`

again run the above docker push command. And this time it will be successfully pushed.

So this was all about to set up secure docker registry.

Setting up Docker Registry With Basic Authentication

- Create a auth directory to store the htpasswd

`mkdir auth`

docker container run --entrypoint htpasswd registry -bnB >auth/htpasswd

eg.

`docker container run --entrypoint htpasswd registry -bnB saurabh password >auth/htpasswd`

-bnB for

b - run in batch mode
n - output should be displayed
B - bcrypt (passwd will be encrypted in this fashion)

you can see this htpasswd file which stored the username and bcrypted password.

```
server@ubuntu:~$ cat /auth/htpasswd
saurabh:$2y$05$VzJ.ud8r06fYO/V/SV7dfOpb2i5ipU5E05IdtaDbW8Py15e.y8ixO
```

- Spin up a container

```
docker container run -d \
-p 5000:5000 \
--name registry \
-v "$(pwd)"/auth:/auth \
-v "$(pwd)"/certs:/certs \
-e "REGISTRY_AUTH=htpasswd" \
-e "REGISTRY_AUTH_HTPASSWD_REALM=Registry Realm" \
-e REGISTRY_AUTH_HTPASSWD_PATH=/auth/htpasswd \
-e REGISTRY_HTTP_TLS_CERTIFICATE=/certs/domain.crt \
-e REGISTRY_HTTP_TLS_KEY=/certs/domain.key \
registry
```

Now your container is Up and Running

so you will see this error when you try to push image after running the registry container...

```
server@ubuntu:~$ sudo docker image push repo.docker.local:5000/ubuntu
The push refers to repository [repo.docker.local:5000/ubuntu]
16542a8fc3be: Preparing
6597da2e2e52: Preparing
977183d4e999: Preparing
c8be1b8f4d60: Preparing
no basic auth credentials
```

So now you need to login...

`docker login repo.docker.local:5000`

it will ask Username and password

```
server@ubuntu:~$ sudo docker login repo.docker.local:5000
Username: saurabh
Password:
Error saving credentials: error storing credentials - err: exit status 1, out:
`Error calling StartServiceByName for org.freedesktop.secrets:
GDBus.Error:org.freedesktop.DBus.Error.TimedOut: Failed to activate service
'org.freedesktop.secrets': timed out (service_start_timeout=120000ms)`
```

I faced the above error while login because it was not able to store credintial...

`sudo apt install gnupg2 pass`

This worked for me..

so now you can push the image.

`sudo docker image push repo.docker.local:5000/ubuntu`