

Lesson 07 Demo 05

Setting Up and Managing a Docker Registry

Objective: To set up and utilize a Docker Registry using the official registry image to facilitate efficient image management and deployment

Tools required: Docker configuration

Prerequisites: Ubuntu configuration and Docker

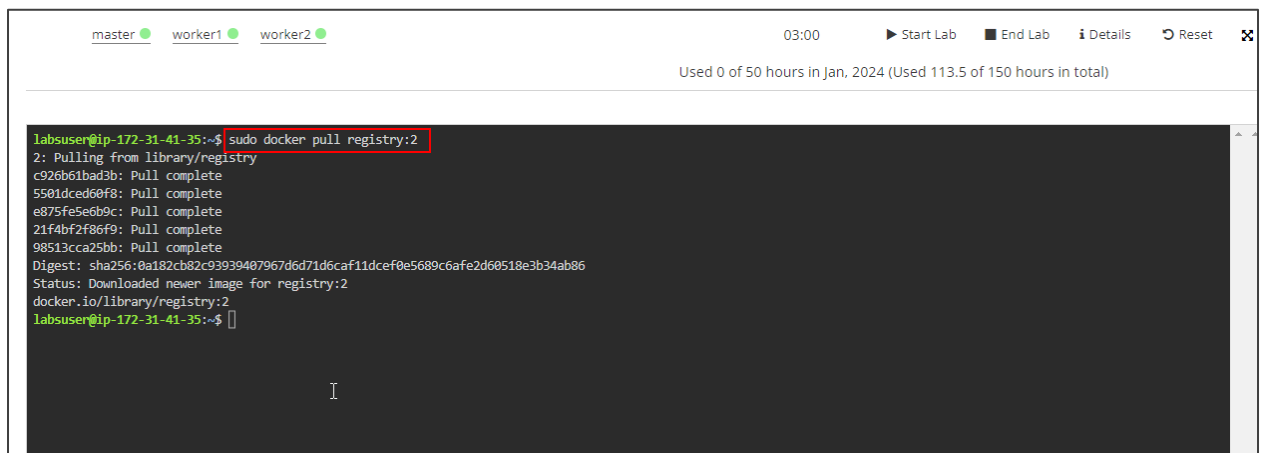
Steps to be followed:

1. Pull and run Docker registry
2. Create a Docker registry
3. Retrieve and use Docker image from local registry

Step 1: Pull and run Docker registry

1.1 Pull a recent version of the Centos Linux container using the following command:

sudo docker pull registry:2



```
master ● worker1 ● worker2 ● 03:00 ▶ Start Lab ■ End Lab ⓘ Details ↺ Reset
Used 0 of 50 hours in Jan, 2024 (Used 113.5 of 150 hours in total)

labsuser@ip-172-31-41-35:~$ sudo docker pull registry:2
2: Pulling from library/registry
c926b61bad3b: Pull complete
5581dced60f8: Pull complete
e875fe5e6b9c: Pull complete
21f4bf2f86f9: Pull complete
98513cca25bb: Pull complete
Digest: sha256:0a182cb82c93939407967d6d71d6caf11dcef0e5689c6afe2d60518e3b34ab86
Status: Downloaded newer image for registry:2
docker.io/library/registry:2
labsuser@ip-172-31-41-35:~$
```

1.2 Run the registry in a new Docker container with port 5000 exposed as shown in the screenshot below:

```
sudo docker run -d -p 5000:5000 \
--restart=always --name registry registry:2
```

```
labsuser@ip-172-31-41-35:~$ sudo docker pull registry:2
2: Pulling from library/registry
c926b61bad3b: Pull complete
5501dced60f8: Pull complete
e875fe5e6b9c: Pull complete
21f4bf2f86f9: Pull complete
98513cca25bb: Pull complete
Digest: sha256:0a182cb82c93939407967d6d71d6caf11dcef0e5689c6afe2d60518e3b34ab86
Status: Downloaded newer image for registry:2
docker.io/library/registry:2
labsuser@ip-172-31-41-35:~$ sudo docker run -d -p 5000:5000 \
> --restart=always --name registry registry:2
6ece41959946527c4213285cb90507ea582976133e6ab4741c19e3039b3ee40c
labsuser@ip-172-31-41-35:~$
```

1.3 Pull another image from Docker Hub and store it in the local registry using the following command:

```
sudo docker pull ubuntu
```

```
5501dced60f8: Pull complete
e875fe5e6b9c: Pull complete
21f4bf2f86f9: Pull complete
98513cca25bb: Pull complete
Digest: sha256:0a182cb82c93939407967d6d71d6caf11dcef0e5689c6afe2d60518e3b34ab86
Status: Downloaded newer image for registry:2
docker.io/library/registry:2
labsuser@ip-172-31-41-35:~$ sudo docker run -d -p 5000:5000 \
> --restart=always --name registry registry:2
6ece41959946527c4213285cb90507ea582976133e6ab4741c19e3039b3ee40c
labsuser@ip-172-31-41-35:~$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
29202e855b20: Pull complete
Digest: sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
labsuser@ip-172-31-41-35:~$
```

1.4 Tag the image for the local registry using the following command:

sudo docker tag ubuntu localhost:5000/ubuntu

```
e875fe5e6b9c: Pull complete
21f4bf2f86f9: Pull complete
98513cca25bb: Pull complete
Digest: sha256:0a182cb82c93939407967d6d71d6caf11dcef0e5689c6afe2d60518e3b34ab86
Status: Downloaded newer image for registry:2
docker.io/library/registry:2
labsuser@ip-172-31-41-35:~$ sudo docker run -d -p 5000:5000 \
> --restart=always --name registry registry:2
6ece41959946527c4213285cb90507ea582976133e6ab4741c19e3039b3ee40c
labsuser@ip-172-31-41-35:~$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
29202e855b20: Pull complete
Digest: sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker tag ubuntu localhost:5000/ubuntu
labsuser@ip-172-31-41-35:~$
```

Step 2: Create a Docker registry

2.1 Use the following command to push the image to a local registry:

sudo docker push localhost:5000/ubuntu

```
docker.io/library/registry:2
labsuser@ip-172-31-41-35:~$ sudo docker run -d -p 5000:5000 \
> --restart=always --name registry registry:2
6ece41959946527c4213285cb90507ea582976133e6ab4741c19e3039b3ee40c
labsuser@ip-172-31-41-35:~$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
29202e855b20: Pull complete
Digest: sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker tag ubuntu localhost:5000/ubuntu
labsuser@ip-172-31-41-35:~$ sudo docker push localhost:5000/ubuntu
Using default tag: latest
The push refers to repository [localhost:5000/ubuntu]
8e87ff28f1b5: Pushed
latest: digest: sha256:93f99350417b086fdd6f77aba81c21211006b15da70cae5bc684823e5dbbdd82 size: 529
labsuser@ip-172-31-41-35:~$
```

2.2 Remove the image from the local cache using the following command:

sudo docker rmi ubuntu

```
6ece41959946527c4213285cb90507ea582976133e6ab4741c19e3039b3ee40c
labsuser@ip-172-31-41-35:~$ sudo docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
29202e855b20: Pull complete
Digest: sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker tag ubuntu localhost:5000/ubuntu
labsuser@ip-172-31-41-35:~$ sudo docker push localhost:5000/ubuntu
Using default tag: latest
The push refers to repository [localhost:5000/ubuntu]
8e87ff28f1b5: Pushed
latest: digest: sha256:93f99350417b086fdd6f77aba81c21211006b15da70caeabbc684823e5dbbdd82 size: 529
labsuser@ip-172-31-41-35:~$ sudo docker rmi ubuntu
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
labsuser@ip-172-31-41-35:~$
```

2.3 Verify if the image is successfully removed using the following command:

sudo docker images

```
labsuser@ip-172-31-41-35:~$ sudo docker rmi ubuntu
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED        SIZE
localhost:5000/ubuntu latest          e34e831650c1   13 days ago   77.9MB
registry             2              909c3ff012b7   7 weeks ago   25.4MB
labsuser@ip-172-31-41-35:~$
```

Step 3: Retrieve and use Docker image from local registry

3.1 Pull the image from the local registry using the following command:

sudo docker pull localhost:5000/ubuntu

```
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED        SIZE
localhost:5000/ubuntu latest          e34e831650c1   13 days ago   77.9MB
registry             2              909c3ff012b7   7 weeks ago   25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker pull localhost:5000/ubuntu
Using default tag: latest
latest: Pulling from ubuntu
Digest: sha256:93f99350417b086fdd6f77aba81c21211006b15da70caeabbc684823e5dbbdd82
Status: Image is up to date for localhost:5000/ubuntu:latest
localhost:5000/ubuntu:latest
labsuser@ip-172-31-41-35:~$
```

3.2 Verify if the image is in the local cache using the following command:
sudo docker images

```
labsuser@ip-172-31-41-35:~$ sudo docker rmi ubuntu
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
localhost:5000/ubuntu latest          e34e831650c1   13 days ago    77.9MB
registry             2              909c3ff012b7   7 weeks ago    25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker pull localhost:5000/ubuntu
Using default tag: latest
latest: Pulling from ubuntu
Digest: sha256:93f99350417b086fdd6f77aba81c21211006b15da70caebbc684823e5dbbdd82
Status: Image is up to date for localhost:5000/ubuntu:latest
localhost:5000/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
localhost:5000/ubuntu latest          e34e831650c1   13 days ago    77.9MB
registry             2              909c3ff012b7   7 weeks ago    25.4MB
labsuser@ip-172-31-41-35:~$
```

3.3 Execute the following command to apply the new image:
sudo docker run -it --rm localhost:5000/ubuntu /bin/bash

```
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:e6173d4dc55e76b87c4af8db8821b1feae4146dd47341e4d431118c7dd060a74
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
localhost:5000/ubuntu latest          e34e831650c1   13 days ago    77.9MB
registry             2              909c3ff012b7   7 weeks ago    25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker pull localhost:5000/ubuntu
Using default tag: latest
latest: Pulling from ubuntu
Digest: sha256:93f99350417b086fdd6f77aba81c21211006b15da70caebbc684823e5dbbdd82
Status: Image is up to date for localhost:5000/ubuntu:latest
localhost:5000/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
localhost:5000/ubuntu latest          e34e831650c1   13 days ago    77.9MB
registry             2              909c3ff012b7   7 weeks ago    25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker run -it --rm localhost:5000/ubuntu /bin/bash
root@29886389793d:/#
```

3.4 Type **exit** and press the **enter** key

```

labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID          CREATED           SIZE
localhost:5000/ubuntu latest          e34e831650c1     13 days ago      77.9MB
registry            2              909c3ff012b7     7 weeks ago      25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker pull localhost:5000/ubuntu
Using default tag: latest
latest: Pulling from ubuntu
Digest: sha256:93f99350417b086fdd6f77aba81c21211006b15da70caebbc684823e5dbbdd82
Status: Image is up to date for localhost:5000/ubuntu:latest
localhost:5000/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID          CREATED           SIZE
localhost:5000/ubuntu latest          e34e831650c1     13 days ago      77.9MB
registry            2              909c3ff012b7     7 weeks ago      25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker run -it --rm localhost:5000/ubuntu /bin/bash
root@29886389793d:/# exit
exit
labsuser@ip-172-31-41-35:~$

```

3.5 Clean up the images and containers using the following command:

```

localhost:5000/ubuntu:latest
labsuser@ip-172-31-41-35:~$ sudo docker images
REPOSITORY          TAG             IMAGE ID          CREATED           SIZE
localhost:5000/ubuntu latest          e34e831650c1     13 days ago      77.9MB
registry            2              909c3ff012b7     7 weeks ago      25.4MB
labsuser@ip-172-31-41-35:~$ sudo docker run -it --rm localhost:5000/ubuntu /bin/bash
root@29886389793d:/# exit
exit
labsuser@ip-172-31-41-35:~$ sudo docker rm -f $(docker ps -aq)
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/json?all=1":
dial unix /var/run/docker.sock: connect: permission denied
"docker rm" requires at least 1 argument.
See 'docker rm --help'.

Usage:  docker rm [OPTIONS] CONTAINER [CONTAINER...]

Remove one or more containers
labsuser@ip-172-31-41-35:~$

```

3.6 Execute the following command to resolve the previous error:

```

sudo chmod 666 /var/run/docker.sock
sudo docker rm -f $(docker ps -aq)

```

```

labsuser@ip-172-31-41-35:~$ sudo docker rm -f $(docker ps -aq)
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/json?all=1":
dial unix /var/run/docker.sock: connect: permission denied
"docker rm" requires at least 1 argument.
See 'docker rm --help'.

Usage:  docker rm [OPTIONS] CONTAINER [CONTAINER...]

Remove one or more containers
labsuser@ip-172-31-41-35:~$ sudo chmod 666 /var/run/docker.sock
labsuser@ip-172-31-41-35:~$ sudo docker rm -f $(docker ps -aq)
6ece41959946
labsuser@ip-172-31-41-35:~$

```

3.7 Remove all Docker images using the following command:

sudo docker rmi \$(docker images -q)

```
Remove one or more containers
labsuser@ip-172-31-41-35:~$ sudo chmod 666 /var/run/docker.sock
labsuser@ip-172-31-41-35:~$ sudo docker rm -f $(docker ps -aq)
6ece41959946
labsuser@ip-172-31-41-35:~$ sudo docker rmi $(docker images -q)
Untagged: localhost:5000/ubuntu:latest
Untagged: localhost:5000/ubuntu@sha256:93f99350417b086fdd6f77aba81c21211006b15da70caebbc684823e5dbbdd82
Deleted: sha256:e34e831650c1bb0be9b6f61c6755749cb8ea2053ba91c6cda27fdd9e089811f
Deleted: sha256:8e87ff28f1b5ff2d5131999ccfa1e674cb252631c50683f5ee43fad59cbea8e1
Untagged: registry:2
Untagged: registry@sha256:0a182cb82c93939407967d6d71d6caf11dcef0e5689c6afe2d60518e3b34ab86
Deleted: sha256:909c3ff012b7f9fc4b802b73f250ad45e4ffa385299b71fdd6813f70a6711792
Deleted: sha256:577c3b283118ca6108a6a8c8a0a00eff666dec82c482dd239dfed49f31553df6
Deleted: sha256:2ba6acf6ed95c86cfb2c830693135513bc019a0c0cf8f2c58990bc215995699f
Deleted: sha256:65920463e77382a5cbe8da3e814c4449fc665487c8a9fa4ac27179e809f5ba2e
Deleted: sha256:54501ccbeaec2665849d200fc4a61ab7254ff0f3bd31ab673879fe321fa2ad7f
Deleted: sha256:9fe9a137fd002363ac64f5af66146702432b638a83ee0c5b620c40a9e433e813
labsuser@ip-172-31-41-35:~$
```

By following these steps, you have successfully established and employed a Docker Registry using the official registry image, enabling efficient image management and seamless deployment in your Docker environment.