# Lab 4 - Setting up a Local Docker Registry

## Introduction

Docker is a great tool for deploying user servers. Docker even has a public registry called Docker Hub to store Docker Images. While Docker let users to upload Docker creations to their Docker Hub for free, anything user upload is also public. This might not be the best option for user project.

This guide will show how to set up and secure own private Docker registry. By the end of this lab will be able to push a custom Docker image to private registry and pull the image securely from a host.

## 1. Docker Registry

The Registry is an open source stateless, highly scalable server side application that stores and distribute Docker images.

**1.1** Login as **“root”** user on **aio110** host:

Copy

```
ssh root@aio110
```

## 2. Configuring local Docker registry

**2.1 Install docker-distribution package:**

Copy

```
yum install docker-distribution -y
```

**2.2 List docker-distribution contents:** Use the rpm command to list the contents of the docker-distribution file in Centos. There are nearly 200 files (mostly python code in the package). This command shows only documentation and configuration:

Copy

```
rpm -ql docker-distribution | grep -E "(/etc)|(/usr/share)|(systemd)"
```

**Output:**

```
/etc/docker-distribution/registry/config.yml

/usr/lib/systemd/system/docker-distribution.service

/usr/share/doc/docker-distribution-2.6.2

/usr/share/doc/docker-distribution-2.6.2/AUTHORS

/usr/share/doc/docker-distribution-2.6.2/CONTRIBUTING.md

/usr/share/doc/docker-distribution-2.6.2/LICENSE

/usr/share/doc/docker-distribution-2.6.2/MAINTAINERS

/usr/share/doc/docker-distribution-2.6.2/README.md
```

**2.3 Start the docker-distribution service:**

Copy

```
systemctl enable docker-distribution

systemctl start docker-distribution

systemctl status docker-distribution
```

**Output:**

```
● docker-distribution.service - v2 Registry server for Docker

   Loaded: loaded (/usr/lib/systemd/system/docker-
distribution.service; enabled; vendor preset: disabled)

   Active: active (running) since Mon 2018-02-26 05:43:16 UTC; 33ms
ago
```

```
 Main PID: 15102 (registry)

   Memory: 4.1M

   CGroup: /system.slice/docker-distribution.service

           └─15102 /usr/bin/registry serve /etc/docker-
distribution/regist...



Feb 26 05:43:16 pod27-master.onecloud.com systemd[1]: Started v2
Registry ...

Feb 26 05:43:16 pod27-master.onecloud.com systemd[1]: Starting v2
Registry...

Feb 26 05:43:16 pod27-master.onecloud.com registry[15102]: time="2018-
02-2...

Feb 26 05:43:16 pod27-master.onecloud.com registry[15102]: time="2018-
02-2...

Feb 26 05:43:16 pod27-master.onecloud.com registry[15102]: time="2018-
02-2...

Hint: Some lines were ellipsized, use -l to show in full.
```

# 3. Copy an image from Docker Hub to your registry

You can pull an image from Docker Hub and push it to your registry. The following example pulls the ubuntu:16.04 image from Docker Hub and re-tags it as my-ubuntu, then pushes it to the local registry. Finally, the ubuntu:16.04 and my-ubuntu images are deleted locally and the my-ubuntu image is pulled from the local registry.

**3.1** Pull the ubuntu:16.04 image from Docker Hub.

Copy

```
docker pull ubuntu:16.04

docker images
```

**Output:**

```
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE

ubuntu              16.04               0458a4468cbc        4 weeks
ago         112MB
```

**3.2** Tag the image as localhost:5000/my-ubuntu. This creates an additional tag for the existing image. When the first part of the tag is a hostname and port, Docker interprets this as the location of a registry, when pushing.

Copy

```
docker tag ubuntu:16.04 localhost:5000/my-ubuntu

docker images
```

**Output:**

```
REPOSITORY                  TAG                 IMAGE ID
CREATED             SIZE

ubuntu                      16.04               0458a4468cbc        4
weeks ago         112MB

localhost:5000/my-ubuntu    latest              0458a4468cbc        4
weeks ago         112MB
```

**3.3** Push the image to the local registry running at localhost:5000:

Copy

```
docker push localhost:5000/my-ubuntu

docker images
```

**3.4** Remove the locally-cached ubuntu:16.04 and localhost:5000/my-ubuntu images, so that you can test pulling the image from your registry. This does not remove the localhost:5000/my-ubuntu image from your registry.

Copy

```
docker image remove ubuntu:16.04

docker images
```

**Output:**

```
REPOSITORY                 TAG                 IMAGE ID
CREATED             SIZE

localhost:5000/my-ubuntu   latest              0458a4468cbc        4
weeks ago          112MB
```

Copy

```
docker image remove localhost:5000/my-ubuntu

docker images
```

**Output:**

```
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
```

**3.5** Pull the localhost:5000/my-ubuntu image from your local registry.

Copy

```
docker pull localhost:5000/my-ubuntu

docker images
```

**Output:**

```
REPOSITORY                 TAG                 IMAGE ID
CREATED             SIZE
```

```
localhost:5000/my-ubuntu   latest             0458a4468cbc        4
weeks ago         112MB
```

# 4. Cleanup

**4.1** To remove all the images run the below commands:

Copy

```
docker rmi `docker images -q` -f
```

**Sample Output:**

```
Untagged: localhost:5000/my-ubuntu:latest

Untagged: localhost:5000/my-
ubuntu@sha256:d69d303a7581d67dc692b5496d516339f131a0cf7045b06978c6154a
bc8bc12e

Deleted:
sha256:0458a4468cbceea0c304de953305b059803f67693bad463dcbe7cce2c91ba67
0

Deleted:
sha256:77e6ddba346d8ad1e436256f6373dede5af4002006981b7d4116c561c759cef
a

Deleted:
sha256:8db758ab2fdb54da0aec53aeac876934337e6170f5a8c8872b3d4171e3d465b
7

Deleted:
sha256:a7fc6b405fe8ef71edfa6163d1dc9f1cb1df426049eefaa7d388e9df21a061a
d

Deleted:
sha256:5a3e35538f7f2e2727c8ac92f08c30002b9e8a77737de0dab91244344d59f69
b
```

```
Deleted:
sha256:ff986b10a018b48074e6d3a68b39aad8ccc002cdad912d4148c0f92b3729323
e
```

**4.2** Verify that docker images are removed:

Copy

```
docker images
```

**Output:**

```
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
```