

# Pushing and Pulling to and from Docker Hub

## Lesson Objectives

- Understanding where images come from
- Pulling a Docker image from Docker Hub
- Pushing a Docker image to Docker Hub

## Getting an image from Docker Hub

Docker Hub (<https://hub.docker.com/>) is the place where open Docker images are stored. When we ran our first image by typing

```
docker run --rm -p 8787:8787 rocker/verse
```

the software first checked if this image is available on your computer and since it wasn't it downloaded the image from Docker Hub. So getting an image from Docker Hub works sort of automatically. If you just want to pull the image but not run it, you can also do

```
docker pull rocker/verse
```

## Getting an image to Docker Hub

Imagine you made your own Docker image and would like to share it with the world you can sign up for an account on <https://hub.docker.com/> (<https://hub.docker.com/>). After verifying your email you are ready to go and

upload your first docker image.

1. Log in on <https://hub.docker.com/> (<https://hub.docker.com/>)
2. Click on *Create Repository*.
3. Choose a name (e.g. `verse_gapminder`) and a description for your repository and click *Create*.
4. Log into the Docker Hub from the command line

```
docker login --username=yourhubusername --email=youremail@company.com
```

just with your own user name and email that you used for the account. Enter your password when prompted. If everything worked you will get a message similar to

```
WARNING: login credentials saved in /home/username/.docker/config.json  
Login Succeeded
```

5. Check the image ID using

```
docker images
```

and what you will see will be similar to

REPOSITORY SIZE	TAG	IMAGE ID	CREATED
verse_gapminder_gsl es ago 1.975 GB	latest	023ab91c6291	3 minut
verse_gapminder tes ago 1.955 GB	latest	bb38976d03cf	13 minu
rocker/verse ago 1.954 GB	latest	0168d115f220	3 days

and tag your image

```
docker tag bb38976d03cf yourhubusername/verse_gapminder:fi  
rsttry
```

The number must match the image ID and `:firsttry` is the tag. In general, a good choice for a tag is something that will help you understand what this container should be used in conjunction with, or what it represents. If this container contains the analysis for a paper, consider using that paper's DOI or journal-issued serial number; if it's meant for use with a particular version of a code or data version control repo, that's a good choice too - whatever will help you understand what this particular image is intended for.

## 6. Push your image to the repository you created

```
docker push yourhubusername/verse_gapminder
```

Your image is now available for everyone to use.

## Saving and loading images

Pushing to Docker Hub is great, but it does have some disadvantages:

1. Bandwidth - many ISPs have much lower upload bandwidth than download bandwidth.
2. Unless you're paying extra for the private repositories, pushing equals publishing.
3. When working on some clusters, each time you launch a job that uses a Docker container it pulls the container from Docker Hub, and if you are running many jobs, this can be really slow.

Solutions to these problems can be to save the Docker container locally as a tar archive, and then you can easily load that to an image when needed.

To save a Docker image after you have pulled, committed or built it you use the `docker save` command. For example, lets save a local copy of the `verse_gapminder` docker image we made:

```
docker save verse_gapminder > verse_gapminder.tar
```

If we want to load that Docker container from the archived tar file in the future, we can use the `docker load` command:

```
docker load --input verse_gapminder.tar
```

## Challenge Questions

- Download your partner's image. How did that compare speed-wise to downloading the verse image the first time?
- Browse Docker Hub for interesting images. What could be useful to you?
- Discuss the pros and cons of using Docker images from someone you don't know with your neighbour.

Next: Go to Lesson 05 Dockerfiles (<05-dockerfiles.html>) or back to the main page

(<http://ropenscilabs.github.io/r-docker-tutorial/>).