

Section 7 - Container Images - Docker Hub Registry

4 Image Tagging and Pushing to Docker Hub

nginx - Example (1)

- Example: search nginx on docker.hub

The screenshot shows the Docker Hub search results for 'nginx'. The search bar at the top contains 'nginx'. The results are sorted by 'Most Popular'. The first result is the official 'nginx' image, which is highlighted with a red box. Below it is 'jwilder/nginx-proxy', also highlighted with a red box. The third result is 'jrscs/letsencrypt-nginx-proxy-companion'. The left sidebar shows filters for Docker Certified, Images, and Categories.

Filters

Docker Certified *i*

☐ ☒ Docker Certified

Images

☐ Verified Publisher *i*
Docker Certified And Verified Publisher Content

☐ Official Images *i*
Official Images Published By Docker

Categories *i*

☐ Analytics

☐ Application Frameworks

☐ Application Infrastructure

☐ Application Services

☐ Base Images

☐ Databases

☐ DevOps Tools

☐ Featured Images

☐ Messaging Services

1 - 25 of 55,814 results for **nginx**. [Clear search](#)

Most Popular

nginx

Updated 12 minutes ago

Official build of Nginx.

Container Linux 386 ARM 64 ARM x86-64 IBM Z PowerPC 64 LE Application Infrastructure

OFFICIAL IMAGE *i*

10M+ 10K+
Downloads Stars

jwilder/nginx-proxy

By [jwilder](#) • Updated 3 months ago

Automated Nginx reverse proxy for docker containers

Container Linux x86-64

10M+ 1.6K
Downloads Stars

jrscs/letsencrypt-nginx-proxy-companion

By [jrscs](#) • Updated 2 months ago

LetsEncrypt container to use with nginx as proxy

10M+ 505
Downloads Stars

nginx - Example (2)

- From the search result we can see that there are other popular not official images displayed as :

`[user-name]/[repo-name]`

`jwilder/nginx-proxy`

- How we actually refer to an image ??

Image reference (1)

- Images don't actually have a name even though we refer to them while we are talking casually

```
# docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
mysql	latest	d72169616e20	2 days ago	443M
nginx	1.15	27a188018e18	10 days ago	109M
nginx	latest	27a188018e18	10 days ago	109M
...				
httpd	2.4	0eba3d04566e	2 months ago	132M
openjdk	8u181-jdk	f2194a7e67df	3 months ago	624M
jwilder/nginx-proxy	0.7.0	f445b41383ae	9 months ago	147M
...				
acme-registry:5000/nms-core	10.3.1	4a34e9dea800	4 hours ago	759M

Note: From the output of the command we can see that there is not a "name" column.

Image reference (2)

- Except for the image ID, We have to refer to an image with three different pieces of information:

`[registry-server-hostname]:[port]/[username]/REPOSITORY:TAG`

```
docker pull nginx =>          <== official image on Docker Hub  
docker pull jwilder/nginx-proxy <== public user image on Docker Hub  
docker pull acme-registry:5000/nms-core <== image on private registry
```

- The default registry is **docker hub** and so can be omitted

Image reference (3)

- The **repository** of non official images is composed from two parts, the **account-name** and the actual **repository name**, for example:

```
# docker pull jwilder/nginx-proxy:0.7.0
```

- Official Repositories live at the "root namespace" of the registry, so they do not need **account-name** in front of the repository name.

```
# docker pull nginx
```

Image TAG

- The image tag is like a version and a branch as well.
- There are also similarities between the image tag and the Git tag.
- It's really just a pointer to a specific image commit.

Image TAG (2) - (example nginx)

Supported tags and respective Dockerfile links

- `1.15.12` , `mainline` , `1` , `1.15` , `latest` (*mainline/stretch/Dockerfile*)
- `1.15.12-perl` , `mainline-perl` , `1-perl` , `1.15-perl` , `perl` (*mainline/stretch-perl/Dockerfile*)
- `1.15.12-alpine` , `mainline-alpine` , `1-alpine` , `1.15-alpine` , `alpine` (*mainline/alpine/Dockerfile*)
- `1.15.12-alpine-perl` , `mainline-alpine-perl` , `1-alpine-perl` , `1.15-alpine-perl` , `alpine-perl` (*mainline/alpine-perl/Dockerfile*)
- `1.16.0` , `stable` , `1.16` (*stable/stretch/Dockerfile*)

Example: Form the *nginx* official image page we can see that:

- `1.15.12`, `mainline`, `1`, `1.15`, `latest` => all refer to the exact same image
- tag is a way of referring an image (an alias) and may contain numbers and words

Image TAG (3) - (example nginx)

- 1.15.12, mainline, 1, 1.15, latest => all refer to the exact same image

```
# docker pull nginx
# docker pull nginx:1.15
# docker pull nginx:1.15.12
# docker pull nginx:mainline
```

```
# docker image ls nginx
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
nginx	1.15	27a188018e18	10 days ago	109MB
nginx	1.15.12	27a188018e18	10 days ago	109MB
nginx	latest	27a188018e18	10 days ago	109MB
nginx	mainline	27a188018e18	10 days ago	109MB

Note: These tags are just labels that point to an actual image ID and we can have as many as we want.

How to create a custom image

There are 3 ways to create a Docker image:

1. Use a **Dockerfile** to Build a custom image
2. Re-tag an existing Docker image
3. Create a new image from a container

docker image tag (1)

- Use the `docker image tag` command to create a tag TARGET_IMAGE that refers to SOURCE_IMAGE.
- Usage: `docker image tag SOURCE_IMAGE[:TAG] TARGET_IMAGE[:TAG]`

Example:

```
# docker image tag nginx gerassimos/nginx

# docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
gerassimos/nginx	latest	27a188018e18	10 days ago	109MB
nginx	1.15	27a188018e18	10 days ago	109MB
nginx	1.15.12	27a188018e18	10 days ago	109MB
nginx	latest	27a188018e18	10 days ago	109MB
...				

docker image tag (2)

- The *first* image repository is the starting point, the source.
 - The *second* image repository is the new repository name that will be created, the target.
 - Optionally, we can specify a TAG. If we do not specify a TAG, then always the default is the *latest*.
 - We could also tag an old image (old version of software) with *latest*. This is why *latest* doesn't always mean *latest* version.
 - Maybe *default* could be a better name instead of *latest*.
 - Generally you can trust that official image use the *latest* tag for the latest version of software.
 - The new image that has just been created have the same image ID as the source image and this is because they are actually referring to the same Docker image.
-
- **This is a local image that does exist yet on Docker Hub.**

docker image push

- I can upload the custom image that I have just created to the docker.hub registry by using the `docker image push` command.
- It is like a Git push.

```
# docker push gerassimos/nginx
The push refers to repository [docker.io/gerassimos/nginx]
fc4c9f8e7dac: Preparing
912ed487215b: Preparing
5dacd731af1b: Preparing
denied: requested access to the resource is denied
```

I will get an error `access denied` because I need to login first.

docker login (1)

- In order to upload an image to the Docker Hub registry you need to create an Docker Hub account first and then perform the `docker login` command from your Docker host.
- By default we will login to the Docker Hub registry but we can override this step by using a private registry or any other registry.

```
# docker login
...
Username: gerassimos
Password:
...
Login Succeeded
```

docker login (2)

- The password is stored unencrypted (although not in plain-text) in the `~/.docker/config.json` file.

```
# cat ~/.docker/config.json
{
  "auths": {
    "https://index.docker.io/v1/": {
      "auth": "ZaBcDefgaBcDefgaBcDefga="
    }
  },
  "HttpHeaders": {
    "User-Agent": "Docker-Client/18.06.1-ce (linux)"
  }
}
```

Note:

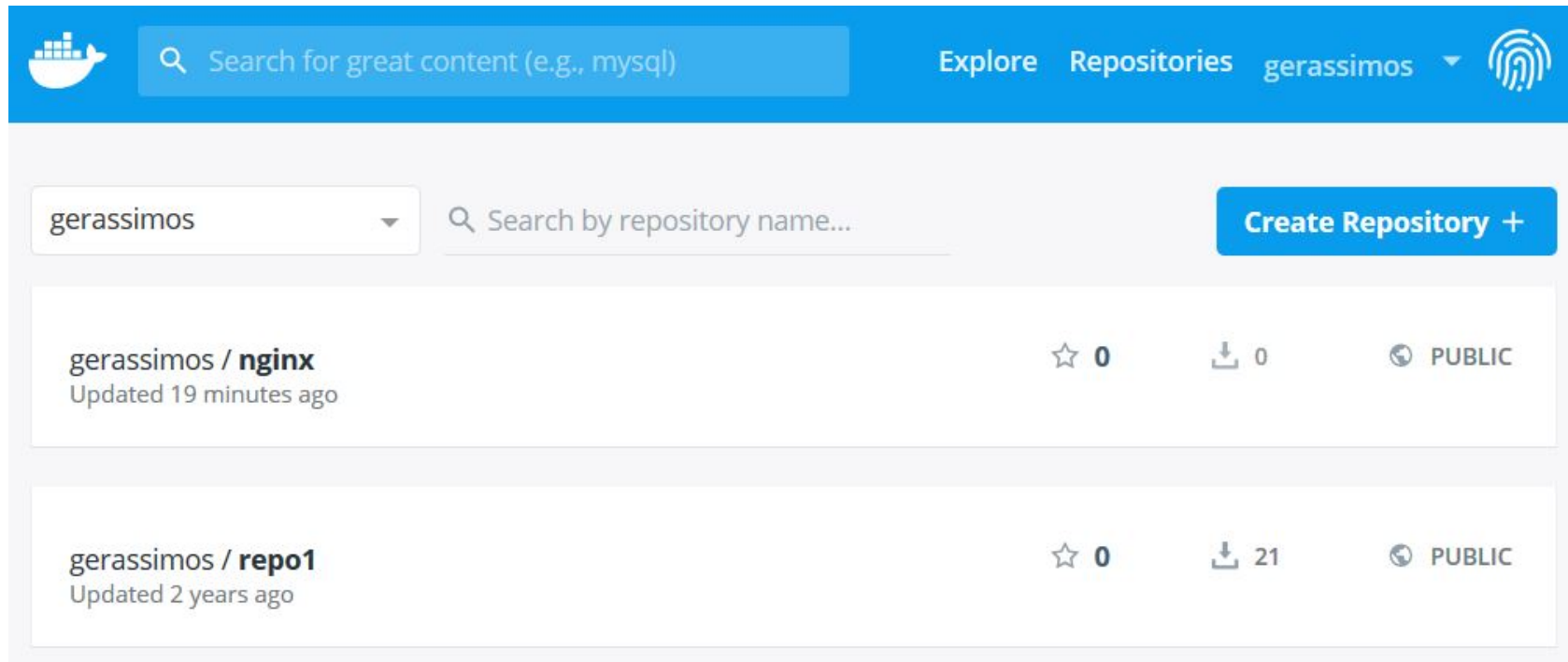
- In production we may want to use more secure authentications procedures.
- You can always perform a `docker logout` to remove/delete the authentication key from the `config.json` file.

docker image push

- After successful login operation we can now **push** our custom image.

```
# docker image push gerassimos/nginx
The push refers to repository [docker.io/gerassimos/nginx]
fc4c9f8e7dac: Mounted from library/nginx
912ed487215b: Mounted from library/nginx
5dacd731af1b: Mounted from library/nginx
latest: digest: sha256:c10f4146f30fda9f40946bc114afeb1f4e867877c4928326
```


docker image push



The screenshot shows the Docker Hub interface for the user 'gerassimos'. The top navigation bar includes the Docker logo, a search bar with the placeholder 'Search for great content (e.g., mysql)', and links for 'Explore', 'Repositories', and the user profile 'gerassimos'. Below the navigation bar, the user's profile section shows a dropdown menu with 'gerassimos' selected, a search bar for repository names, and a 'Create Repository +' button. The repository list displays two entries:

Repository Name	Stars	Downloads	Visibility
gerassimos / nginx Updated 19 minutes ago	0	0	PUBLIC
gerassimos / repo1 Updated 2 years ago	0	21	PUBLIC

docker image tag (other than *latest*)

- In the following example we are going to specify a TAG (other than *latest*).
- Then we will push again.

```
# docker image tag gerassimos/nginx gerassimos/nginx:test1
# docker image ls
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
gerassimos/nginx	latest	27a188018e18	11 days ago	109MB
gerassimos/nginx	test1	27a188018e18	11 days ago	109MB
nginx	1.15	27a188018e18	11 days ago	109MB
nginx	1.15.12	27a188018e18	11 days ago	109MB
nginx	latest	27a188018e18	11 days ago	109MB
nginx	mainline	27a188018e18	11 days ago	109MB
...				



docker image tag (other than *latest*)


- Use the `docker image push` to upload the image to Docker Hub

```
# docker image push gerassimos/nginx:test1
The push refers to repository [docker.io/gerassimos/nginx]
fc4c9f8e7dac: Layer already exists
912ed487215b: Layer already exists
5dacd731af1b: Layer already exists
test1: digest: sha256:c10f4146f30fda9f40946bc114afeb1f4e867877c49283207a08c
```

Notice that the image layer is not actually uploaded because `Layer already exists`.

docker image tag (other than *latest*)

 [Search for great content \(e.g., mysql\)](#) [Explore](#) [Repositories](#) [Organizations](#) [Get Help](#) [gerassimos](#) 




gerassimos/nginx

By [gerassimos](#) • Updated 4 hours ago

Container

[Manage Repository](#)

 Pulls 2

[Overview](#) [Tags](#)

Tags (2)

test1 45 MB

Last update: 4 hours ago

latest 45 MB

Last update: 4 hours ago

docker image tag (other than *latest*)

The result of this example is a *public* repository **gerassimos/nginx** containing two images:

- gerassimos/nginx:latest
- gerassimos/nginx:test1

Create a private repository (1)


- With your regular Docker free account you are entitled to create also one private repository.

Note:

Private repositories allow you to keep container images private, either to your own account or within an organization or team.


[Ref: Private Repositories](#)

Create a private repository (2)

 docker hub Explore Repositories

Repositories Create

Create Repository


 gerassimos

private-repo1


Description

Visibility

Using 0 of 1 private repositories. [Get more](#)

☐ **Public** 

Public repositories appear in Docker Hub search results

☒ **Private** 

Only you can view private repositories

Exercise

- Ref:
- [D S7 L4 Image Tagging and-Pushing to Docker Hub ex.md](#)