

Installation

- <https://docs.docker.com/install>
- Docker Cheat Sheet

Docker hub

Repository hosting publicly available Docker images:

`https://hub.docker.com/explore`

Search images

```
> docker search nextcloud
```

| NAME | DESCRIPTION | STARS | OFFICIAL | AUTOMATED |
|-------------------------|-------------------|-------|----------|-----------|
| nextcloud | A safe home ... | 424 | [OK] | |
| linuxserver/nextcloud | A Nextcloud ... | 56 | | |
| greyltc/nextcloud | Nextcloud: ... | 34 | | [OK] |
| wonderfall/nextcloud | All-in-one ... | 27 | | [OK] |
| rootlogix/nextcloud | Nextcloud ... | 17 | | [OK] |
| lsiornhf/nextcloud | ARMHF based ... | 8 | | |
| ownyourbits/nextcloudpi | NextCloud ARM ... | 7 | | |
| ... | | | | |

Pull image using CLI

```
> docker image pull alpine
```

```
Using default tag: latest
```

```
latest: Pulling from library/alpine
```

```
ff3a5c916c92: Pull complete
```

```
Digest: sha256:7df6db5aa61ae9480f52f0b3a06a140ab98d427f86d8d5de0bedab9b8df6b1c0
```

```
Status: Downloaded newer image for alpine:latest
```

Pull Nextcloud image

```
> docker image pull wonderfall/nextcloud ❶  
Using default tag: latest ❷  
latest: Pulling from wonderfall/nextcloud  
ff3a5c916c92: Already exists ❸  
a542d4c3cffb: Pull complete ❹  
83001cc0bea0: Pull complete  
41a33c66b2c1: Pull complete  
a70bf67726f3: Pull complete  
fea90b3d29ac: Pull complete  
Digest: sha256:472c5c7...2ca20cca45 ❺  
Status: Downloaded newer image for wonderfall/nextcloud:latest
```

Nextcloud based on Alpine

Alpine

ff3a5c916c92

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92



ff3a5c916c92

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92

a542d4c3cffb

ff3a5c916c92

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92

83001cc0bea0

a542d4c3cffb

ff3a5c916c92

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92

41a33c66b2c1

83001cc0bea0

a542d4c3cffb

ff3a5c916c92

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92

a70bf67726f3

41a33c66b2c1

83001cc0bea0

a542d4c3cffb

ff3a5c916c92

Nextcloud based on Alpine

Alpine

Nextcloud based on Alpine

ff3a5c916c92

fea90b3d29ac

a70bf67726f3

41a33c66b2c1

83001cc0bea0

a542d4c3cffb

ff3a5c916c92

Inspect image

```
> docker image inspect dac77467ddcc
[
  {
    "Id": "sha256:dac77467ddccc2287d99558245bd34707... ",
    "RepoTags": [
      "nextcloud:13.0.4"
    ],
    "RepoDigests": [
      "nextcloud@sha256:fb3e77f19b21364925e8f02..."
    ],
    ...
  }
]
```

Search an image's tags

```
> curl -s https://registry.hub.docker.com/v2/repositories/library/nextcloud/tags/ | \
jq '. "results"[]["name"]' # requires «aptitude install curl jq»
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 11856 0 11856 0 0 11856 0 --:--:-- --:--:-- --:--:-- 20371
"fpn"
"production"
"stable"
"latest"
"13"
"13.0"
"13.0.2"
"production-apache"
"stable-apache"
"apache"
```

Nextcloud image by version

```
> docker image pull nextcloud:13.0.4
13.0.4: Pulling from library/nextcloud
3d77ce4481b1: Pull complete
32bfdb6043a8: Pull complete
028453741593: Pull complete
f93d7bd342a3: Pull complete
4a2fac611953: Pull complete
87fdcf7d0f94: Pull complete
Digest: sha256:fb3e77f19b21364925e8f02d6e5ad3a1 ...
Status: Downloaded newer image for nextcloud:13.0.4
```

List images by CLI

```
> docker image ls
```

| REPOSITORY | TAG | IMAGE ID | CREATED | SIZE |
|----------------------|--------|--------------|--------------|--------|
| nextcloud | 13.0.4 | dac77467ddcc | 3 days ago | 544MB |
| wonderfall/nextcloud | latest | 57e1fb51b334 | 2 months ago | 328MB |
| alpine | latest | 3fd9065eaf02 | 4 months ago | 4.15MB |

Nextcloud latest image

```
> docker image pull nextcloud
```

```
Using default tag: latest
```

```
latest: Pulling from library/nextcloud ❶
```

```
Digest: sha256:fb3e77f19b21364925e8f02d6e5ad3a1 ... ❷
```

```
Status: Downloaded newer image for nextcloud:latest
```

Duplicate Nextcloud images

> docker image ls

| REPOSITORY | TAG | IMAGE ID | CREATED | SIZE |
|------------|--------|---------------------|------------|--------------|
| nextcloud | 13.0.4 | dac77467ddcc | 4 days ago | 544MB |
| nextcloud | latest | dac77467ddcc | 4 days ago | 544MB |
| ... | | | | |

Maven ringing a bell?

```
<dependency>  
  <groupId>junit</groupId>          <!-- wonderful -->  
  <artifactId>junit</artifactId>    <!-- nextcloud -->  
  <version>4.12</version>           <!-- 13.0.4 -->  
</dependency>
```

Un tag image by version

```
> docker image rm nextcloud:latest
```

```
Untagged: nextcloud:latest
```

```
> docker image ls
```

| REPOSITORY | TAG | IMAGE ID | CREATED | SIZE |
|------------|--------|--------------|------------|-------|
| nextcloud | 13.0.4 | dac77467ddcc | 4 days ago | 544MB |

```
...
```

Remove image by version

```
> docker image rm nextcloud:13.0.2
```

```
Untagged: nextcloud:latest
```

```
Untagged: nextcloud@sha256:c693921e69cb89cd0bee7c014280159df647e5ba87f54c895650156d973df035
```

```
Deleted: sha256:10ae267ddcf25bfe5cc059685d3d005bcfe7229b44c3a6f93e0a07795d33b5b2
```

```
Deleted: sha256:1c271f4f2f19a222cd116c771b02294c5dd596fa8a0366559061f83a0de8de3f
```

```
...
```

```
Deleted: sha256:2c833f307fd8f18a378b71d3c43c575fabdb88955a2198662938ac2a08a99928
```

Starting Nextcloud container

```
> docker run -d -p 8080:80 --name nc13 nextcloud  
517e3dba488763eb615f2c68d417e1b7fb3a9ce5bb4a5ffc346dcb86c00d13d2
```

List running containers

```
> docker ps -a # show stopped containers as well
```

| CONTAINER ID | IMAGE | COMMAND | ... | PORTS | NAMES |
|--------------|-----------|--------------------------|-----|----------------------|-------|
| 517e3dba4887 | nextcloud | "/entrypoint.sh apac..." | ... | 0.0.0.0:8080->80/tcp | nc13 |

Enter running container

```
> docker exec -it nextcloud_db_1 /bin/bash
```

```
# ls -al
total 84
drwxr-xr-x 1 root root 4096 Jun 20 09:28 .
drwxr-xr-x 1 root root 4096 Jun 20 09:28 ..
-rwxr-xr-x 1 root root    0 Jun 20 09:28 .dockerenv
drwxr-xr-x 1 root root 4096 May 25 20:20 bin
drwxr-xr-x 2 root root 4096 Nov 19 2017 boot
drwxr-xr-x 5 root root  340 Jun 20 09:28 dev
drwxr-xr-x 2 root root 4096 Apr 30 15:37 docker-entrypoint-initdb.d
lrwxrwxrwx 1 root root   34 May 25 20:20 docker-entrypoint.sh -> usr/local/bin/docker-entrypoint.sh
...
```


Remove container

```
> docker rm nc13  
nc13
```

```
> docker ps -a
```

| CONTAINER ID | IMAGE | COMMAND | CREATED | STATUS | ... | NAMES |
|--------------|-------|---------|---------|--------|-----|-------|
|--------------|-------|---------|---------|--------|-----|-------|

List volumes

> docker volume ls

| DRIVER | VOLUME NAME |
|--------|---------------------|
| local | nextcloud_db |
| local | nextcloud_nextcloud |

ls -al /var/lib/docker/volumes

```
total 40
drwx----- 4 root root 4096 Jun 20 11:13 .
drwx--x--x 14 root root 4096 Jun 20 09:40 ..
-rw----- 1 root root 32768 Jun 20 11:13 metadata.db
drwxr-xr-x 3 root root 4096 Jun 20 11:13 nextcloud_db
drwxr-xr-x 3 root root 4096 Jun 20 11:13 nextcloud_nextcloud
```

List orphaned volumes

```
> docker volume ls -f dangling=true
DRIVER          VOLUME NAME
local           nextcloud_db
local           nextcloud_nextcloud
```

Remove volumes

```
> docker volume rm nextcloud_db nextcloud_nextcloud
nextcloud_db
nextcloud_nextcloud
```

Related exercises

Exercise 1: Airlines, airports and flights

Exercise 2: Creating a Hibernate JPA project

Exercise 3: Adding keys and AUTO_INCREMENT

Exercise 4: Advocating simple key definitions