

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		
greylogic/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

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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
"fpri"
"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
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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