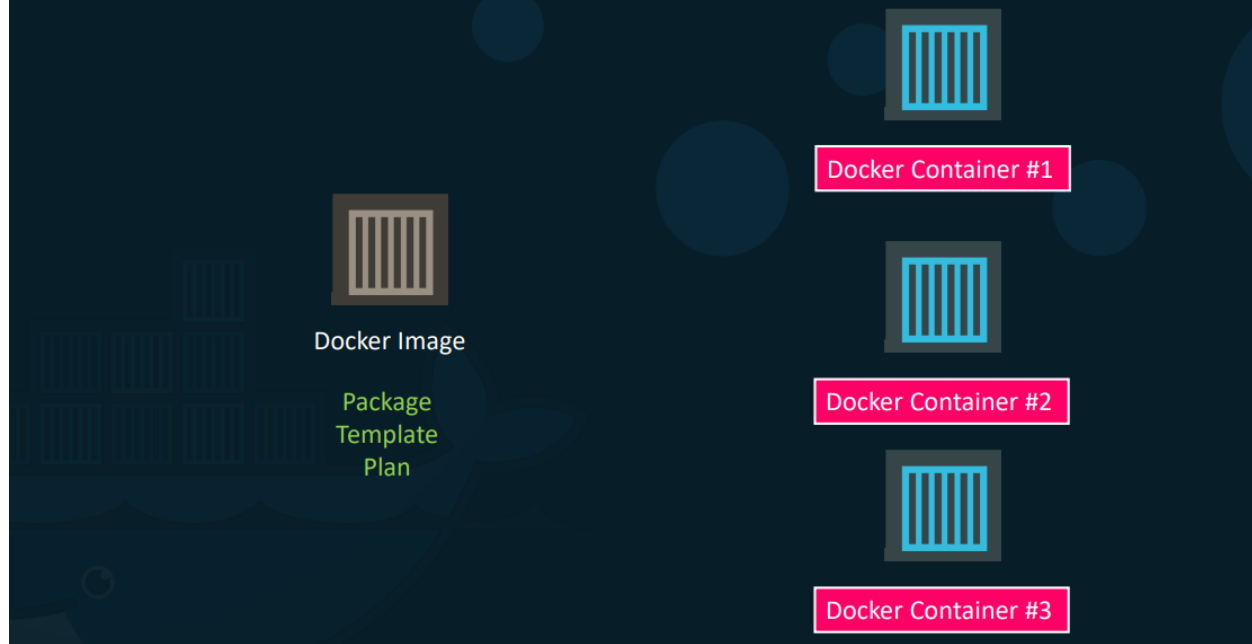


Docker

Container vs image



```
▶ docker run nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
fc7181108d40: Already exists
d2e987ca2267: Pull complete
0b760b431b11: Pull complete
Digest:
sha256:96fb261b66270b900ea5a2c17a26abbfabe95506e73c3a3c65869a6dbe83223a
Status: Downloaded newer image for nginx:latest
```

```
adminlinux@datadog:~$ sudo docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES
```

Docker ps -a

```
adminlinux@datadog:~$ sudo docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES
16087a8480ea   centos:7       "/bin/bash"             11 minutes ago Exited (130) 4 minutes ago          stoic_einstein
11765e230bbb   datadog/agent:latest "/bin/entrypoint.sh"    17 hours ago   Exited (0) 12 hours ago          datadog-agent
a45b54cb4a99   datadog/agent:7.31.1 "/bin/entrypoint.sh"    17 hours ago   Exited (0) 12 hours ago          docker-compose_datadog_1
110228364aee   datadog/docker-dd-agent:latest "/entrypoint.sh supe_"  35 hours ago   Exited (0) 12 hours ago          dd-agent
6d3afcc87f2f   redis          "docker-entrypoint.s_"  36 hours ago   Exited (0) 12 hours ago          redis
```

STOP – stop a container

```
▶ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
796856ac413d	nginx	"nginx -g 'daemon of..."	7 seconds ago	Up 6 seconds	80/tcp	silly_sammet

```
▶ docker stop silly_sammet
```

```
silly_sammet
```

```
▶ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	NAMES
796856ac413d	nginx	"nginx -g 'daemon of..."	7 seconds ago	Exited (0) 3 seconds ago	silly_sammet
cff8ac918a2f	redis	"docker-entrypoint.s..."	6 seconds ago	Exited (0) 3 seconds ago	relaxed_aryabhata

Docker rm id

```
adminlinux@datadog:~$ sudo docker rm 1608
1608
adminlinux@datadog:~$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
11765e230bbb	datadog/agent:latest	"/bin/entrypoint.sh"	17 hours ago	Exited (0) 12 hours ago		datadog-agent
a45b54cb4a99	datadog/agent:7.31.1	"/bin/entrypoint.sh"	17 hours ago	Exited (0) 12 hours ago		datadog-agent
110228364aee	datadog/docker-dd-agent:latest	"/entrypoint.sh supe..."	35 hours ago	Exited (0) 12 hours ago		dd-agent
6d3afcc87f2f	redis	"docker-entrypoint.s..."	36 hours ago	Exited (0) 12 hours ago		redis

Docker image

```
adminlinux@datadog:~$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
datadog/agent	latest	3b7a2236dfe4	44 hours ago	826MB
gcr.io/datadoghq/agent	7	5597a2236eed	8 days ago	821MB
redis	latest	f1285ef3611d	3 weeks ago	137MB
datadog/agent	7.31.1	88420c49af00	3 years ago	817MB
centos	7	eeb6ee3f44bd	3 years ago	204MB
datadog/docker-dd-agent	latest	c6cd2b93b7af	4 years ago	424MB

Docker pull

Pull – download an image

▶ `docker run nginx`

```
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
fc7181108d40: Already exists
d2e987ca2267: Pull complete
0b760b431b11: Pull complete
Digest:
sha256:96fb261b66270b900ea5a2c17a26abbfabe95506e73c3a3c65869a6dbe83223a
Status: Downloaded newer image for nginx:latest
```

▶ `docker pull nginx`

```
Using default tag: latest
latest: Pulling from library/nginx
fc7181108d40: Pull complete
d2e987ca2267: Pull complete
0b760b431b11: Pull complete
Digest:
sha256:96fb261b66270b900ea5a2c17a26abbfabe95506e73c3a3c65869a6dbe83223a
Status: Downloaded newer image for nginx:latest
```

```
adminlinux@datadog:~$ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
76249c7cd503: Pull complete
Digest: sha256:9cbcd754112939e914291337b5e554b07ad7c392491dba6daf25eef1332a22e8
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

```
adminlinux@datadog:~$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED
datadog/agent	latest	3b7a2236dfe4	44 hours ago
gcr.io/datadoghq/agent	7	5597a2236eed	8 days ago
ubuntu	latest	802541663949	3 weeks ago
redis	latest	f1285ef3611d	3 weeks ago
datadog/agent	7.31.1	88420c49af00	3 years ago
centos	7	eeb6ee3f44bd	3 years ago
datadog/docker-dd-agent	latest	c6cd2b93b7af	4 years ago

```
adminlinux@datadog:~$ docker run jenkins/jenkins

Unable to find image 'jenkins/jenkins:latest' locally
latest: Pulling from jenkins/jenkins
f014853ae203: Pull complete
a69f9f3862d4: Pull complete
4fd83ff5bc81: Pull complete
150c77c19acd: Pull complete
49d84a76228b: Pull complete
a95ef15091f1: Pull complete
0083cc9dd6e1: Pull complete
9e410fd47f66: Pull complete
ff2395c86696: Pull complete
a23691df9669: Pull complete
f217f598f50f: Pull complete
b941f1fbd14d: Pull complete
Digest: sha256:f764a832c2eee06c7b08722a25e3591ade32463980456995a9cf6f4ade03e00
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
b082e395f8f8	jenkins/jenkins:latest	"/usr/bin/tini -- /u..."	50 seconds ago	Up 50 seconds	0.0.0.0:8080->8080/tcp, [::]:8080->8080/tcp, 0.0.0.0:50000->50000/tcp, [::]:50000->50000/tcp

```
adminlinux@datadog:~$
```

Run – attach and detach

```
▶ docker run kodekloud/simple-webapp
```

This is a sample web application that displays a colored background.
* Serving Flask app "app" (lazy loading)
* Running on http://0.0.0.0:8080/ (Press CTRL+C to quit)

```
▶ docker run -d kodekloud/simple-webapp
```

```
a043d40f85fef414254e4775f9336ea59e19e5cf597af5c554e0a35a1631118
```

```
▶ docker attach a043d
```

Run – tag

```
docker run redis
```

```
Using default tag: latest
```

```
latest: Pulling from library/redis
```

```
f5d23c7fed46: Pull complete
```

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

```
1:C 31 Jul 2019 09:02:32.624 # o000o000o000o Redis is starting o000o000o000o
```

```
1:C 31 Jul 2019 09:02:32.624 # Redis version=5.0.5, bits=64, commit=00000000, modified=0, pid=1, just started
```

```
1:M 31 Jul 2019 09:02:32.626 # Server initialized
```

```
docker run redis:4.0
```

TAG

```
Unable to find image 'redis:4.0' locally
```

```
4.0: Pulling from library/redis
```

```
e44f086c03a2: Pull complete
```

```
Status: Downloaded newer image for redis:4.0
```

```
1:C 31 Jul 2019 09:02:56.527 # o000o000o000o Redis is starting o000o000o000o
```

```
1:C 31 Jul 2019 09:02:56.527 # Redis version=4.0.14, bits=64, commit=00000000, modified=0, pid=1, just started
```

```
1:M 31 Jul 2019 09:02:56.530 # Server initialized
```

Compose

```
adminlinux@datadog:~/simple-file$ docker compose up --build
WARN[0000] /home/adminlinux/simple-file/docker-compose.yml: the attribute `version` is obsolete, it will be ignored
[+] Running 21/23
  db [=====] 88.5MB / 88.5MB Pulling
  ✓ 619014d83c02 Pull complete
  ✓ 7ec0fe6664f6 Pull complete
  ✓ 9ca7ba8f7764 Pull complete
  ✓ 9e1155d037e2 Pull complete
  ✓ febcfb7f8870 Pull complete
  ✓ 8c78c79412b5 Pull complete
  ✓ 5a35744405c5 Pull complete
  ✓ 27717922e067 Pull complete
  * 36f0c5255550 Extracting [=====>] 53.62MB/53.62MB
  ✓ dbf0a396f422 Download complete
  ✓ ec4c06ea33e5 Download complete
  ✓ e8dd33eba6d1 Download complete
  ✓ 51c81b3b2c20 Download complete
  ✓ 2a03dd76f5d7 Download complete
  ✓ redis Pulled
  ✓ 9824c27679d3 Pull complete
  ✓ 9880d81ff87a Pull complete
  ✓ 168694ef5d62 Pull complete
  ✓ f8eab6d4856e Pull complete
  ✓ 1f79dac8d2d4 Pull complete
  ✓ 4f4fb700ef54 Pull complete
  ✓ 61cfb50eef3 Pull complete
```

Docker registry

Image

Docker Hub

image: `docker.io/nginx/nginx`

`docker.io` `nginx` `nginx`
Registry User/ Image/
Account Repository

`gcr.io/ kubernetes-e2e-test-images/dnsutils`

Deploy Private Registry

```
▶ docker run -d -p 5000:5000 --name registry registry:2
```

```
▶ docker image tag my-image localhost:5000/my-image
```

```
▶ docker push localhost:5000/my-image
```

```
▶ docker pull localhost:5000/my-image
```

```
▶ docker pull 192.168.56.100:5000/my-image
```

```

adminlinux@datadog:~$ docker run -it --rm -p 8888:8080 tomcat:8.0
Unable to find image 'tomcat:8.0' locally
8.0: Pulling from library/tomcat
f189db1b88b3: Pull complete
3d06cf2f1b5e: Pull complete
edd0da9e3091: Pull complete
eb7768aae14e: Pull complete
e2780f585e0f: Pull complete
e5ed720afeba: Pull complete
d9e134700cfc: Pull complete
e4804b33d02a: Pull complete
b9df0c24315e: Pull complete
49fdae8eaa20: Pull complete
1aea3d9a32e6: Pull complete
Digest: sha256:8ecb10948deb32c34aeadf7bf95d12a93fbd3527911fa629c1a3e7823b89ce6f

```

Docker pid

```

adminlinux@datadog:~$ docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS
7b742f142352   tomcat:8.0   "catalina.sh run"       21 seconds ago   Up 20 seconds   0.0.0.0:8888->8080/tcp, [::]:8888->8080/tcp

adminlinux@datadog:~$ docker exec 7b742f142352 ps -eaf
UID          PID    PPID  C STIME TTY          TIME CMD
root         1       0   6 10:01 ?           00:00:05 /docker-java-home/jre/bin/java -Djava.util.logging.config.file=/usr/local/tomcat/conf/logging.properties -Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager -Djdk.tls.ephemeralDHKeySize=2048 -Djava.protocol.handler.pkgs=org.apache.catalina.w
rces -Dignore.endorsed.dirs=-classpath /usr/local/tomcat/bin/bootstrap.jar:/usr/local/tomcat/bin/tomcat-juli.jar -Dcatalina.base=/usr/local/tomcat -D
a.home=/usr/local/tomcat -Djava.io.tmpdir=/usr/local/tomcat/temp org.apache.catalina.startup.Bootstrap start
root        55       1   0  0:02 ?           00:00:00 ps -eaf

```

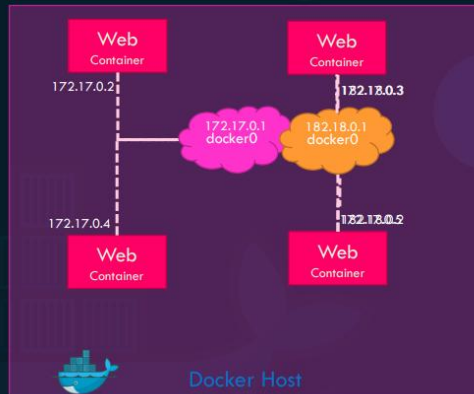
Docker storage

```

adminlinux@datadog:~$ sudo ls -l /var/lib/docker
total 64
drwx--x--x  5 root root  4096 Sep 11 09:01 buildkit
drwx--x--- 14 root root  4096 Sep 11 10:01 containers
-rw-----  1 root root    36 Sep  9 17:31 engine-id
drwx-----  3 root root  4096 Sep  9 17:31 image
drwxr-x---  3 root root  4096 Sep  9 17:31 network
drwx--x--- 133 root root 20480 Sep 11 10:01 overlay2
drwx-----  3 root root  4096 Sep  9 17:31 plugins
drwx-----  2 root root  4096 Sep 11 04:36 runtimes
drwx-----  2 root root  4096 Sep  9 17:31 swarm
drwx-----  2 root root  4096 Sep 11 09:59 tmp
drwx-----x 13 root root  4096 Sep 11 09:39 volumes

```

User-defined networks



```
docker network create \
  --driver bridge \
  --subnet 182.18.0.0/16
  custom-isolated-network
```

```
docker network ls
```

```
root@osboxes:/root # docker network ls
NETWORK ID          NAME                DRIVER              SCOPE
d8a0fb9370fe        bridge             bridge              local
46d476b87cd9        customer-isolated-network bridge              local
4de485ee10e         docker_gwbridge    bridge              local
e29d188b4e47        host               host                local
smrhc7vzb9zm        ingress            overlay             swarm
d9f11695f0d6        none               null                local
d371b4009142        simplewebappdocker_default bridge              local
```

Inspect Network

```
▶ docker inspect blissful_hopper
```

```
[
  {
    "Id": "35505f7810d17291261a43391d4b6c0846594d415ce4f4d0a6ffbf9cc5109048",
    "Name": "/blissful_hopper",
    "NetworkSettings": {
      "Bridge": "",
      "Gateway": "172.17.0.1",
      "IPAddress": "172.17.0.6",
      "MacAddress": "02:42:ac:11:00:06",
      "Networks": {
        "bridge": {
          "Gateway": "172.17.0.1",
          "IPAddress": "172.17.0.6",
          "MacAddress": "02:42:ac:11:00:06",
        }
      }
    }
  }
]
```