

DOCKER实验报告

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实验环境

操作系统：Ubuntu 19.02

实验流程

docker安装

1. 更新apt包索引

```
sudo apt-get update
```

2. 安装apt依赖包

```
sudo apt-get install \
  apt-transport-https \
  ca-certificates \
  curl \
  gnupg-agent \
  software-properties-common
```

3. 添加docker官方的GPG密钥：

```
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
```

4. 通过搜索指纹的后八个字符，验证指纹密钥

```
sudo apt-key fingerprint 0EBFCD88
```

5. 设置稳定版仓库

```
sudo add-apt-repository \
  "deb [arch=amd64] https://download.docker.com/linux/ubuntu \
  $(lsb_release -cs) \
  stable"
```

6. 安装docker engine-community

```
sudo apt-get install docker-ce docker-ce-cli containerd.io
```

7. 将当前用户添加进docker用户组

```
sudo groupadd docker
sudo gpasswd -a ${USER} docker
sudo service docker restart
```

注销当前用户并重新登陆

8. 测试docker是否安装成功

```
sudo docker version
```

```
admin@CloudComputer:~$ sudo docker version
Client: Docker Engine - Community
 Version:           19.03.3
 API version:       1.40
 Go version:        go1.12.10
 Git commit:        a872fc2f86
 Built:             Tue Oct  8 01:00:44 2019
 OS/Arch:           linux/amd64
 Experimental:      false

Server: Docker Engine - Community
 Engine:
  Version:          19.03.3
  API version:      1.40 (minimum version 1.12)
  Go version:       go1.12.10
  Git commit:       a872fc2f86
  Built:            Tue Oct  8 00:59:17 2019
  OS/Arch:          linux/amd64
  Experimental:     false
 containerd:
  Version:          1.2.10
  GitCommit:        b34a5c8af56e510852c35414db4c1f4fa6172339
 runc:
  Version:          1.0.0-rc8+dev
  GitCommit:        3e425f80a8c931f88e6d94a8c831b9d5aa481657
 docker-init:
  Version:          0.18.0
  GitCommit:        fec3683
```

运行第一个容器

运行镜像

```
sudo docker run hello-world
```

```

admin@CloudComputer:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
1b930d010525: Pull complete
Digest: sha256:4fe721ccc2e8dc7362278a29dc660d833570ec2682f4e4194f4ee23e415e1064
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

admin@CloudComputer:~$

```

```
docker run -it ubuntu bash
```

```

admin@CloudComputer:~$ sudo docker run -it ubuntu bash
[sudo] admin 的密码:
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
7ddbc47eeb70: Pull complete
c1bbdc448b72: Pull complete
8c3b70e39044: Pull complete
45d437916d57: Pull complete
Digest: sha256:6e9f67fa63b0323e9a1e587fd71c561ba48a034504fb804fd26fd8800039835d
Status: Downloaded newer image for ubuntu:latest
root@cd5c3833ddc1:/#
root@cd5c3833ddc1:/# ls
bin    dev    home  lib64  mnt    proc   run    srv    tmp    var
boot  etc    lib   media  opt    root   sbin   sys    usr
root@cd5c3833ddc1:/# exit
exit
admin@CloudComputer:~$

```

显示本地镜像库内容

```
docker images
```

```

admin@CloudComputer:~$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
ubuntu              latest             775349758637       6 weeks ago
64.2MB
hello-world         latest             fce289e99eb9       11 months ago
1.84kB
admin@CloudComputer:~$

```

获得帮助

```
docker --help
```

显示运行中容器

```
docker ps
```

显示所有容器（包含已中止）

```
docker ps -a
```

```
admin@CloudComputer:~$ sudo docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS              PORTS          NAMES
cd5c3833ddc1   ubuntu    "bash"                  22 minutes ago Exited (0) 21 minutes ago           strange_sutherland
0acb92c5c60    hello-world "/hello"                48 minutes ago Exited (0) 48 minutes ago           gracious_antonelli
```

继续运行原容器并进入

```
docker restart [容器名]
docker ps
docker attach [容器名]
```

```
admin@CloudComputer:~$ sudo docker restart strange_sutherland
strange_sutherland
admin@CloudComputer:~$ sudo docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS              PORTS          NAMES
cd5c3833ddc1   ubuntu    "bash"                  25 minutes ago Up 28 seconds           strange_sutherland
admin@CloudComputer:~$ sudo docker attach strange_sutherland
root@cd5c3833ddc1:/#
```

MySQL与容器化

拉取MySQL镜像并检查

```
docker pull mysql:5.7
docker images
```

```
admin@CloudComputer:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
mysql         5.7       1e4405fe1ea9   3 weeks ago   437MB
ubuntu        latest    775349758637   6 weeks ago   64.2MB
hello-world    latest    fce289e99eb9   11 months ago 1.84kB
```

构建docker镜像

在创建有效dockerfile的文件的文件目录下执行

```
docker build . -t hello
```

```

root@CloudComputer:/home/admin/桌面/mydock# docker build . -t hello
Sending build context to Docker daemon 2.048kB
Step 1/3 : FROM ubuntu
---> 775349758637
Step 2/3 : ENTRYPOINT ["top", "-b"]
---> Running in 568c06e5a5b8
Removing intermediate container 568c06e5a5b8
---> 45a98d0c6762
Step 3/3 : CMD ["-c"]
---> Running in 11325c925b1f
Removing intermediate container 11325c925b1f
---> 1e17f3f188a2
Successfully built 1e17f3f188a2
Successfully tagged hello:latest
root@CloudComputer:/home/admin/桌面/mydock#

```

使用docker images查看，可以看到创建成功：

```

root@CloudComputer:/home/admin/桌面/mydock# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED
SIZE
hello                latest             1e17f3f188a2       About a minute ago
64.2MB
mysql                5.7               1e4405fe1ea9       3 weeks ago
437MB
ubuntu              latest             775349758637       6 weeks ago
64.2MB
hello-world         latest             fce289e99eb9       11 months ago
1.84kB
root@CloudComputer:/home/admin/桌面/mydock#

```

运行创建的镜像

```
docker run -it --rm hello -H
```

其中--rm参数让docker退出时还原到默认容器的文件系统内容，运行成功：

```

root@CloudComputer:/home/admin/桌面/mydock# docker run -it --rm hello -H
top - 14:06:13 up 5:00, 0 users, load average: 0.00, 0.06, 0.02
Threads: 1 total, 1 running, 0 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.2 us, 0.3 sy, 0.0 ni, 95.4 id, 1.9 wa, 0.0 hi, 0.2 si, 0.0 st
KiB Mem : 8165428 total, 3753012 free, 955568 used, 3456848 buff/cache
KiB Swap: 1459804 total, 1459804 free, 0 used. 6924800 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR S  %CPU  %MEM     TIME+ COMMAND
    1 root        20   0   36480   3096   2736 R   0.0   0.0   0:00.42 top

```

使用MySQL容器

启动服务器

```
sudo docker run -p 3306:3306 --name mysql12 -e MYSQL_ROOT_PASSWORD=root -d mysql:5.7
```

```

root@CloudComputer:/home/admin/桌面/mydock# sudo docker run -p 3306:3306 --name mysql12 -e MYSQL_ROOT_PASSWORD=root -d mysql:5.7
0bb87bcab1cfc6b0f2babc31e14013bde0851ca1e5e66a02a7048cb3b29cfe0
root@CloudComputer:/home/admin/桌面/mydock#

```

启动mysql客户端容器并允许mysql客户端

```
docker run -it --net host mysql:5.7 "sh"
```

```
root@CloudComputer:/home/admin/桌面/mydock# docker run -it --net host mysql:5.7
"sh"
# mysql -h127.0.0.1 -P3306 -uroot -proot
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.28 MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █
```

同时可以访问容器，查看数据库存放位置等等。

文章分享

[这可能是最为详细的Docker入门吐血总结](#)