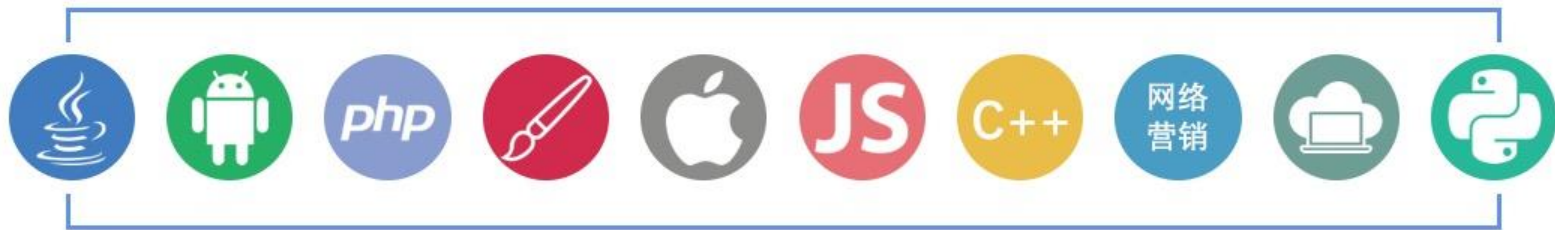# Docker核心技术之镜像

Docker核心技术之镜像-课程概要

- 镜像简介
- 镜像管理
- 总结

Docker核心技术之镜像

镜像简介

镜像简介

- 镜像是一个Docker的可执行文件，其中包括运行应用程序所需的所有代码内容、依赖库、环境变量和配置文件等。
- 通过镜像可以创建一个或多个容器。

Docker核心技术之镜像

镜像管理

镜像搜索 - docker search

- 作用：

    搜索Docker Hub(镜像仓库)上的镜像

- 命令格式：

    docker search [OPTIONS] TERM

- 命令参数(OPTIONS)：

    -f, --filter filter   根据提供的格式筛选结果

    --format string   利用Go语言的format格式化输出结果

    --limit int   展示最大的结果数，默认25个

    --no-trunc   内容全部显示

镜像搜索-docker search

- 命令演示:

```
[root@centos-linux ~]# docker search  -f is-official=true ubuntu
NAME                 DESCRIPTION                              STARS      OFFICIAL        AUTOMATED
ubuntu               Ubuntu is a Debian-based Linux operating sys…   7653       [OK]
ubuntu-upstart       Upstart is an event-based replacement for th…  86         [OK]
neurodebian          NeuroDebian provides neuroscience research s…  50         [OK]
ubuntu-debootstrap   debootstrap --variant=minbase --components=m…  38         [OK]
[root@centos-linux ~]# docker search ubuntu
NAME                                              DESCRIPTION                              STARS      OFFICIAL        AUTOMATED
ubuntu                                            Ubuntu is a Debian-based Linux operating sys…   7653       [OK]
dorowu/ubuntu-desktop-lxde-vnc                    Ubuntu with openssh-server and NoVNC     180                        [OK]
rastasheep/ubuntu-sshd                            Dockerized SSH service, built on top of offi…  146                        [OK]
ansible/ubuntu14.04-ansible                       Ubuntu 14.04 LTS with ansible            91                         [OK]
ubuntu-upstart                                    Upstart is an event-based replacement for th…  86         [OK]
neurodebian                                       NeuroDebian provides neuroscience research s…  50         [OK]
ubuntu-debootstrap                                debootstrap --variant=minbase --components=m…  38         [OK]
1and1internet/ubuntu-16-nginx-php-phpmyadmin-mysql-5   ubuntu-16-nginx-php-phpmyadmin-mysql-5   34                         [OK]
nuagebec/ubuntu                                   Simple always updated Ubuntu docker images w…  23                         [OK]
tutum/ubuntu                                      Simple Ubuntu docker images with SSH access   18
i386/ubuntu                                       Ubuntu is a Debian-based Linux operating sys…   13
ppc64le/ubuntu                                    Ubuntu is a Debian-based Linux operating sys…   12
1and1internet/ubuntu-16-apache-php-7.0            ubuntu-16-apache-php-7.0                 9                          [OK]
eclipse/ubuntu_jdk8                               Ubuntu, JDK8, Maven 3, git, curl, nmap, mc, …  6                          [OK]
codenvy/ubuntu_jdk8                               Ubuntu, JDK8, Maven 3, git, curl, nmap, mc, …  4                          [OK]
1and1internet/ubuntu-16-nginx-php-phpmyadmin-mariadb-10   ubuntu-16-nginx-php-phpmyadmin-mariadb-10   4                          [OK]
1and1internet/ubuntu-16-nginx-php-5.6-wordpress-4   ubuntu-16-nginx-php-5.6-wordpress-4   3                          [OK]
darksheer/ubuntu                                  Base Ubuntu Image -- Updated hourly       3                          [OK]
pivotaldata/ubuntu                                A quick freshening-up of the base Ubuntu doc…  1
ossobv/ubuntu                                     Custom ubuntu image from scratch (based on o…  0
1and1internet/ubuntu-16-sshd                      ubuntu-16-sshd                           0                          [OK]
1and1internet/ubuntu-16-healthcheck               ubuntu-16-healthcheck                    0                          [OK]
```

镜像查看 - docker images/docker image ls

- 作用：

    列出本地镜像

- 命令格式：

    docker images [OPTIONS] [REPOSITORY[:TAG]]

    或者 docker image ls [OPTIONS] [REPOSITORY[:TAG]]

- 命令参数(OPTIONS)：

    -a, --all   展示所有镜像 (默认隐藏底层的镜像)

    --no-trunc   不缩略显示

    -q, --quiet   只显示镜像ID

镜像查看-docker images/docker image ls

- 命令演示:

```
[root@centos-linux ~]# docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
ubuntu              latest       452a96d81c30      13 days ago      79.6MB
centos              latest       e934aafc2206      4 weeks ago      199MB
[root@centos-linux ~]# docker images centos:latest
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
centos              latest       e934aafc2206      4 weeks ago      199MB
[root@centos-linux ~]#
```

镜像下载 - docker pull

- 作用：

    下载远程仓库（如Docker Hub）中的镜像

- 命令格式：

    docker pull [OPTIONS] NAME[:TAG|@DIGEST]

- 命令参数(OPTIONS)：

    -a, --all-tags   下载所有符合给定tag的镜像

镜像下载-docker pull

- 命令演示:

```
[root@centos-linux ~]# docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
a48c500ed24e: Pull complete
1e1de00ff7e1: Pull complete
0330ca45a200: Pull complete
471db38bcfbf: Pull complete
0b4aba487617: Pull complete
Digest: sha256:c8c275751219dadad8fa56b3ac41ca6cb22219ff117ca98fe82b42f24e1ba64e
Status: Downloaded newer image for ubuntu:latest
[root@centos-linux ~]# docker pull centos
Using default tag: latest
latest: Pulling from library/centos
469cfcc7a4b3: Pull complete
Digest: sha256:989b936d56b1ace20ddf855a301741e52abca38286382cba7f44443210e96d16
Status: Downloaded newer image for centos:latest
[root@centos-linux ~]#
```

镜像删除 - docker rmi/docker image rm

- 作用：

    将本地的一个或多个镜像删除

- 命令格式：

    docker rmi [OPTIONS] IMAGE [IMAGE...]

     或者 **docker image rm [OPTIONS] IMAGE [IMAGE...]**

- 命令参数(OPTIONS)：

    -f, --force   强制删除

镜像删除-docker rmi/docker image rm

- 命令演示:

```
[root@centos-linux ~]# docker images
REPOSITORY          TAG              IMAGE ID            CREATED            SIZE
ubuntu              latest           452a96d81c30       13 days ago        79.6MB
centos              latest           e934aafc2206       4 weeks ago        199MB
[root@centos-linux ~]# docker rmi e934 452a
Untagged: centos:latest
Untagged: centos@sha256:989b936d56b1ace20ddf855a301741e52abca38286382cba7f44443210e96d16
Deleted: sha256:e934aafc22064b7322c0250f1e32e5ce93b2d19b356f4537f5864bd102e8531f
Deleted: sha256:43e653f84b79ba52711b0f726ff5a7fd1162ae9df4be76ca1de8370b8bbf9bb0
Untagged: ubuntu:latest
Untagged: ubuntu@sha256:c8c275751219dadad8fa56b3ac41ca6cb22219ff117ca98fe82b42f24e1ba64e
Deleted: sha256:452a96d81c30a1e426bc250428263ac9ca3f47c9bf086f876d11cb39cf57aeec
Deleted: sha256:96fccbf869d3c0ee0fb2e976fdf356dc5872f6410030fd094bbc5b34a7559cdb
Deleted: sha256:38ffa1479cb9fd81d0d4d057c282a155a4a83bff5d2b507ee9563f996d74272d
Deleted: sha256:cc6967c5525a55626688a773e4fe578321a2e126a3b1df1bc0763cfd1583c50c
Deleted: sha256:2a2d486f02032f5a6cc56290a244512daa07a8efe0124bccc5701f0a778aa947
Deleted: sha256:65bdd50ee76a485049a2d3c2e92438ac379348e7b576783669dac6f604f6241b
[root@centos-linux ~]# docker images
REPOSITORY          TAG              IMAGE ID            CREATED            SIZE
[root@centos-linux ~]#
```

镜像保存备份 – docker save

- 作用：

    将本地的一个或多个镜像打包保存成本地tar文件(输出到STDOUT)

- 命令格式：

    docker save [OPTIONS] IMAGE [IMAGE...]

- 命令参数(OPTIONS)：

    -o, --output string   指定写入的文件名和路径

镜像保存备份 – docker save

- 命令演示:

```
[root@centos-linux ~]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ubuntu              latest              452a96d81c30        13 days ago         79.6MB
centos              latest              e934aafc2206        4 weeks ago         199MB
[root@centos-linux ~]# docker save -o linux_images.tar centos ubuntu
[root@centos-linux ~]# ls
anaconda-ks.cfg   linux_images.tar   original-ks.cfg
```

镜像备份导入 - docker load

- 作用：

    将save命令打包的镜像导入本地镜像库中

- 命令格式：

    docker load [OPTIONS]

- 命令参数(OPTIONS)：

    -i, --input string   指定要打入的文件，如没有指定，默认是STDIN

    -q, --quiet   不打印导入过程信息

镜像备份导入-docker load

- 命令演示:

```
[root@centos-linux ~]# docker load -i linux_images.tar
43e653f84b79: Loading layer [=================================================>]  207.2MB/207.2MB
Loaded image: centos:latest
65bdd50ee76a: Loading layer [=================================================>]  82.09MB/82.09MB
ec75999a0cb1: Loading layer [=================================================>]  15.87kB/15.87kB
67885e448177: Loading layer [=================================================>]  8.192kB/8.192kB
8db5f072feec: Loading layer [=================================================>]  5.632kB/5.632kB
059ad60bcacf: Loading layer [=================================================>]  3.072kB/3.072kB
Loaded image: ubuntu:latest
[root@centos-linux ~]# docker rmi e934 452a
Untagged: centos:latest
Deleted: sha256:e934aafc22064b7322c0250f1e32e5ce93b2d19b356f4537f5864bd102e8531f
Deleted: sha256:43e653f84b79ba52711b0f726ff5a7fd1162ae9df4be76ca1de8370b8bbf9bb0
Untagged: ubuntu:latest
Deleted: sha256:452a96d81c30a1e426bc250428263ac9ca3f47c9bf086f876d11cb39cf57aeec
Deleted: sha256:96fccbf869d3c0ee0fb2e976fdf356dc5872f6410030fd094bbc5b34a7559cdb
Deleted: sha256:38ffa1479cb9fd81d0d4d057c282a155a4a83bff5d2b507ee9563f996d74272d
Deleted: sha256:cc6967c5525a55626688a773e4fe578321a2e126a3b1df1bc0763cfd1583c50c
Deleted: sha256:2a2d486f02032f5a6cc56290a244512daa07a8efe0124bccc5701f0a778aa947
Deleted: sha256:65bdd50ee76a485049a2d3c2e92438ac379348e7b576783669dac6f604f6241b
[root@centos-linux ~]# docker load -i linux_images.tar -q
Loaded image: centos:latest
Loaded image: ubuntu:latest
```

镜像重命名 – docker tag

- 作用：

  对本地镜像的NAME、TAG进行重命名，并新产生一个命名后镜像

- 命令格式：

  docker tag SOURCE_IMAGE[:TAG] TARGET_IMAGE[:TAG]

- 命令参数(OPTIONS)：

  无

镜像重命名 – docker tag

- 命令演示:

```
[root@centos-linux ~]# docker images
REPOSITORY          TAG              IMAGE ID          CREATED           SIZE
ubuntu              latest           452a96d81c30      13 days ago       79.6MB
centos              latest           e934aafc2206      4 weeks ago       199MB
[root@centos-linux ~]# docker tag e934 centos-newname:newtag
[root@centos-linux ~]# docker images
REPOSITORY          TAG              IMAGE ID          CREATED           SIZE
ubuntu              latest           452a96d81c30      13 days ago       79.6MB
centos-newname      newtag           e934aafc2206      4 weeks ago       199MB
centos              latest           e934aafc2206      4 weeks ago       199MB
[root@centos-linux ~]#
```

镜像详细信息 – docker image inspect/docker inspect

- 作用：

  查看本地一个或多个镜像的详细信息

- 命令格式：

  docker image inspect [OPTIONS] IMAGE [IMAGE...]

  或者 docker inspect [OPTIONS] IMAGE [IMAGE...]

- 命令参数(OPTIONS)：

  -f, --format string　　　利用特定Go语言的format格式输出结果

镜像详细信息 – docker image inspect

- 命令演示:

```
[root@centos-linux ~]# docker image inspect -f "{{json .Id}}" centos
"sha256:e934aafc22064b7322c0250f1e32e5ce93b2d19b356f4537f5864bd102e8531f"
[root@centos-linux ~]# docker image inspect -f "{{json .Created}}" centos
"2018-04-06T21:01:51.215822656Z"
[root@centos-linux ~]# docker image inspect centos
[
    {
        "Id": "sha256:e934aafc22064b7322c0250f1e32e5ce93b2d19b356f4537f5864bd102e8531f",
        "RepoTags": [
            "centos-newname:newtag",
            "centos:latest"
        ],
        "RepoDigests": [],
        "Parent": "",
        "Comment": "",
        "Created": "2018-04-06T21:01:51.215822656Z",
        "Container": "20e7cee1d3f15879fb54cb361e2ceb3b4cd260f90e51202feec140f1aa9d8527",
        ......
```

镜像历史信息 – docker history

- 作用：

    查看本地一个镜像的历史(历史分层)信息

- 命令格式：

    docker history [OPTIONS] IMAGE

- 命令参数(OPTIONS)：

    -H, --human　　　　　　将创建时间、大小进行优化打印(默认为true)

    -q, --quiet　　　　　　只显示镜像ID

    　--no-trunc　　　　　　不缩略显示
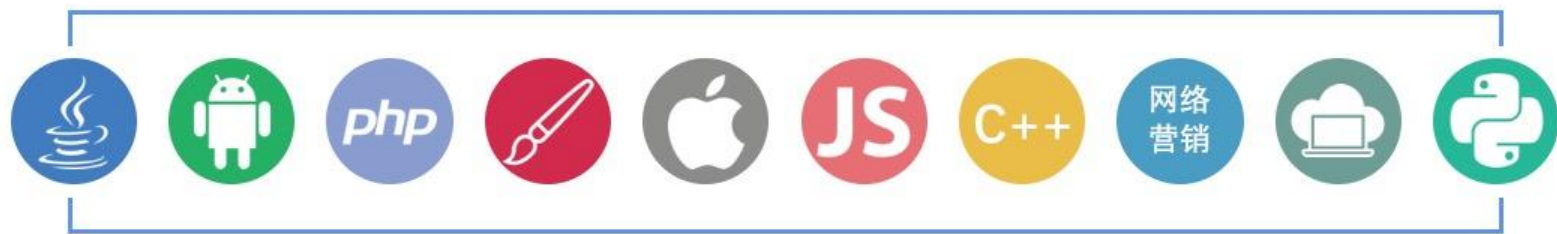
镜像历史信息 – docker history

- 命令演示:

Docker核心技术之镜像

镜像总结

Docker核心技术之镜像 – 总结
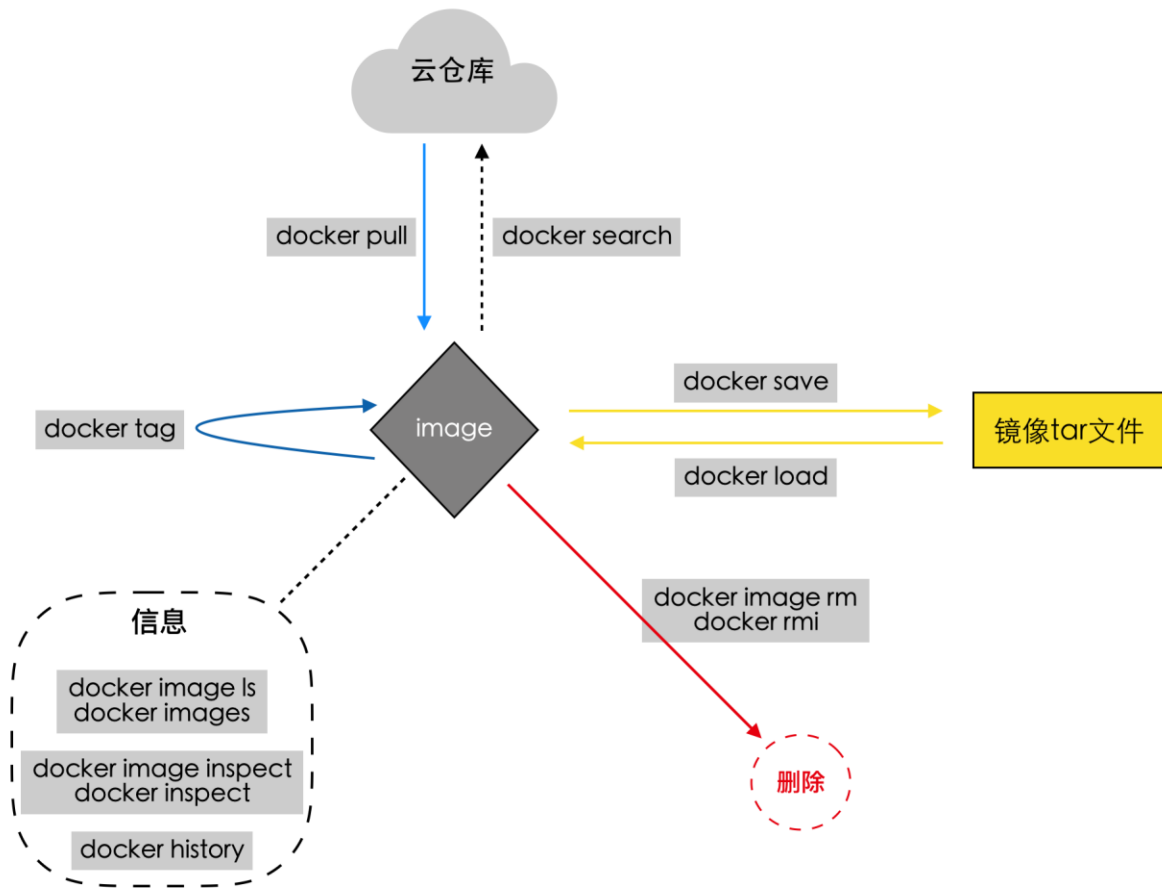
Thank you!

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