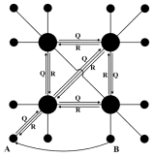

# 从Docker到Kubernetes 第3周

# 法律声明

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# 将容器变成镜像
# Buildfile语法和案例
# 镜像制作中的常见问题

# 将容器变成镜像

```
docker commit <container> [repo:tag]
```

当我们在制作自己的镜像的时候，会在container中安装一些工具、修改配置，如果不做commit保存起来，那么container停止以后再启动，这些更改就消失了。

```
[root@localhost ~]# docker create --name myjava3 -it java /bin/bash
d5c89f21f0d3181823d12ce3fed43f68e2865d00757333692488393e241cd0eb
```

```
[root@localhost ~]# docker start myjava3
myjava3
[root@localhost ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
d5c89f21f0d3        java                "/bin/bash"         11 seconds ago
```

```
[root@localhost ~]# docker exec -it d5c89f21f0d3 /bin/bash
root@d5c89f21f0d3:/# ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc
root@d5c89f21f0d3:/# mkdir leader-us
root@d5c89f21f0d3:/# ls
bin  boot  dev  etc  home  leader-us  lib  lib64  media  mnt
```

# 将容器变成镜像

```
docker commit <container> [repo:tag]
```

```
[root@localhost ~]# docker commit d5c89f21f0d3 myjava
2f2b59c66ebfe68de52e733f3626a359f17ab62d01869c01b536c10129c34d44
[root@localhost ~]# docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             VIRTUAL SIZE
myjava              latest              2f2b59c66ebf        12 seconds ago      817.5 MB
java                latest              2f5a61e35ea4        4 days ago          817.5 MB
mysql               latest              c45e4ba02f47        13 days ago         283.8 MB
```

```
^C[root@localhost ~]# docker  run -it myjava ls
bin   boot   dev   etc   home   leader-us   leader-us2   lib   lib64
```

# 将容器变成镜像

这种做法的优点：

最方便

最快速

缺点：

不规范

无法自动化

# Buildfile语法和案例

一个Java镜像的buildfile

```
FROM nimmis/ubuntu:14.04
MAINTAINER nimmis <kjell.havneskold@gmail.com>
# disable interactive functions
ENV DEBIAN_FRONTEND noninteractive
# set default java environment variable
ENV JAVA_HOME /usr/lib/jvm/java-8-openjdk-amd64
RUN apt-get install -y software-properties-common && \
add-apt-repository ppa:openjdk-r/ppa -y && \
apt-get update && \
apt-get install -y --no-install-recommends openjdk-8-jre && \
rm -rf /var/lib/apt/lists/*
```

# Buildfile语法和案例

vi Dockerfile

docker build -t leader/java .

```
[root@localhost ~]# docker build -t leader/java .
Sending build context to Docker daemon 26.11 kB
Step 0 : FROM nimmis/ubuntu:14.04
14.04: Pulling from nimmis/ubuntu
d3a1f33e8a5a: Downloading [==================>
c22013c84729: Download complete
d74508fb6632: Download complete
91e54dfb1179: Download complete
3cef0f1c61e4: Download complete
79eeda18728f: Download complete
063c3da225eb: Download complete
17136551a16c: Downloading [=================>
6a3ffca038ee: Download complete
8a88e188987e: Download complete
4ca59ee9ed82: Download complete
b47324e3e903: Download complete
2372728fbbb5: Download complete
78889818db0b: Download complete
e592e2748148: Download complete
0be2d2500e5f: Download complete
29f0624fad97: Download complete
29f0624fad97: Pulling fs layer
Status: Downloaded newer image for nimmis/ubuntu:14.04
 ---> 29f0624fad97
Step 1 : MAINTAINER nimmis <kjell.havneskold@gmail.com>
 ---> Running in 127b9f311b15
 ---> ecdc44c657e7
Removing intermediate container 127b9f311b15
Step 2 : ENV DEBIAN_FRONTEND noninteractive
 ---> Running in 9f403968ddd3
 ---> b9c14c67148b
Removing intermediate container 9f403968ddd3
Step 3 : ENV JAVA_HOME /usr/lib/jvm/java-8-openjdk-amd64
 ---> Running in 2979c1c0d927
 ---> 5ba545f19a2b
Removing intermediate container 2979c1c0d927
Step 4 : RUN apt-get install -y software-properties-common && add-apt-repository
 ---> Running in 96ec5bf828d3
Reading package lists...
Building dependency tree...
Reading state information...
software-properties-common is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

# Buildfile语法和案例

Build过程案例分析（上）

```
FROM nimmis/ubuntu:14.04
MAINTAINER nimmis <kjell.havneskold@gmail.com>
# disable interactive functions
ENV DEBIAN_FRONTEND noninteractive
RUN ./hello.sh
# set default java environment variable
ENV JAVA_HOME /usr/lib/jvm/java-8-openjdk-amd64
RUN apt-get install -y software-properties-common && \
add-apt-repository ppa:openjdk-r/ppa -y && \
apt-get update && \
apt-get install -y --no-install-recommends openjdk-8-jre &&
\
rm -rf /var/lib/apt/lists/*
```

```
[root@localhost ~]# ls
@  anaconda-ks.cfg  Dockerfile  hello.sh
```

```
[root@localhost ~]# docker build .
Sending build context to Docker daemon 27.14 kB
Step 0 : FROM nimmis/ubuntu:14.04
 ---> 29f0624fad97
Step 1 : MAINTAINER nimmis <kjell.havneskold@gmail.com>
 ---> Using cache
 ---> ecdc44c657e7
Step 2 : ENV DEBIAN_FRONTEND noninteractive
 ---> Using cache
 ---> b9c14c67148b
Step 3 : RUN ./hello.sh
 ---> Running in 94287c139ffe
/bin/sh: 1: ./hello.sh: not found
```

# Buildfile语法和案例

Build过程案例分析（中）

```
FROM nimmis/ubuntu:14.04
MAINTAINER nimmis <kjell.havneskold@gmail.com>
# disable interactive functions
ENV DEBIAN_FRONTEND noninteractive
ADD hello.sh /bin/hello.sh
RUN  /bin/hello.sh
# set default java environment variable
ENV JAVA_HOME /usr/lib/jvm/java-8-openjdk-amd64
RUN apt-get install -y software-properties-common && \
add-apt-repository ppa:openjdk-r/ppa -y && \
apt-get update && \
apt-get install -y --no-install-recommends openjdk-8-jre &&
\
rm -rf /var/lib/apt/lists/
```

```
[root@localhost ~]# docker build .
Sending build context to Docker daemon 27.14 kB
Step 0 : FROM nimmis/ubuntu:14.04
 ---> 29f0624fad97
Step 1 : MAINTAINER nimmis <kjell.havneskold@gmail.com>
 ---> Using cache
 ---> ecdc44c657e7
Step 2 : ENV DEBIAN_FRONTEND noninteractive
 ---> Using cache
 ---> b9c14c67148b
Step 3 : ADD hello.sh /bin
stat /var/lib/docker/devicemapper/mnt/af42fdb2a83b49fa0ff4076a
[root@localhost ~]# vi Dockerfile
[root@localhost ~]# docker build .
Sending build context to Docker daemon 27.14 kB
Step 0 : FROM nimmis/ubuntu:14.04
 ---> 29f0624fad97
Step 1 : MAINTAINER nimmis <kjell.havneskold@gmail.com>
 ---> Using cache
 ---> ecdc44c657e7
Step 2 : ENV DEBIAN_FRONTEND noninteractive
 ---> Using cache
 ---> b9c14c67148b
Step 3 : ADD hello.sh /bin/hello.sh
 ---> 64f9c359fed3
Removing intermediate container 15b33eb6f645
Step 4 : RUN /bin/hello.sh
 ---> Running in 2fbf2f5ab092
hello,world
 ---> 40e849f2e656
Removing intermediate container 2fbf2f5ab092
```

# Buildfile语法和案例

Build过程案例分析（下）

**RUN  curl http://baidu.com**

```
Step 5 : RUN curl http://baidu.com
 ---> Running in c9d93e61011d
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:--  0:01:04 --:--:--     0curl: (7) Failed to connect
The command '/bin/sh -c curl http://baidu.com' returned a non-zero code: 7
```

**ENV http_proxy=http:///xxxx**
**RUN  curl http://baidu.com**

```
Removing intermediate container 77602505d55e
Step 6 : RUN curl http://baidu.com
 ---> Running in 98682c13f294
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100    81  100    81    0     0    212      0 --:--:-- --:--:-- --:--:--   213
<html>
<meta http-equiv="refresh" content="0;url=http://www.baidu.com/">
</html>
```

# Buildfile语法和案例

## 复杂案例实战：制作ubuntu+java+tomcat+ssh server镜像

```
FROM ubuntu
MAINTAINER yongboy "yongboy@gmail.com"
# 更新源，安装ssh server
RUN echo "deb http://archive.ubuntu.com/ubuntu precise main universe"> /etc/apt/sources.list
RUN apt-get update
RUN apt-get install -y openssh-server
RUN mkdir -p /var/run/sshd
# 设置root ssh远程登录密码为123456
RUN echo "root:123456" | chpasswd
# 添加orache java7源，一次性安装vim，wget，curl，java7，tomcat7等必备软件
RUN apt-get install python-software-properties
RUN add-apt-repository ppa:webupd8team/java
RUN apt-get update
RUN apt-get install -y vim wget curl oracle-java7-installer tomcat7
```

# Buildfile语法和案例

## 复杂案例实战：制作ubuntu+java+tomcat+ssh server镜像

```
# 设置JAVA_HOME环境变量
RUN update-alternatives --display java
RUN echo "JAVA_HOME=/usr/lib/jvm/java-7-oracle">> /etc/environment
RUN echo "JAVA_HOME=/usr/lib/jvm/java-7-oracle">> /etc/default/tomcat7

# 容器需要开放SSH 22端口
EXPOSE 22

# 容器需要开放Tomcat 8080端口
EXPOSE 8080

# 设置Tomcat7初始化运行，SSH终端服务器作为后台运行
ENTRYPOINT service tomcat7 start && /usr/sbin/sshd -D
```

# Buildfile语法和案例

## Using Supervisor with Docker

supervisord.conf

```
[supervisord]
nodaemon=true

[program:sshd]
command=/usr/sbin/sshd -D

[program:apache2]
command=/bin/bash -c "source /etc/apache2/envvars && exec /usr/sbin/apache2 -DFOREGROUND"
```

# 镜像制作中的常见问题

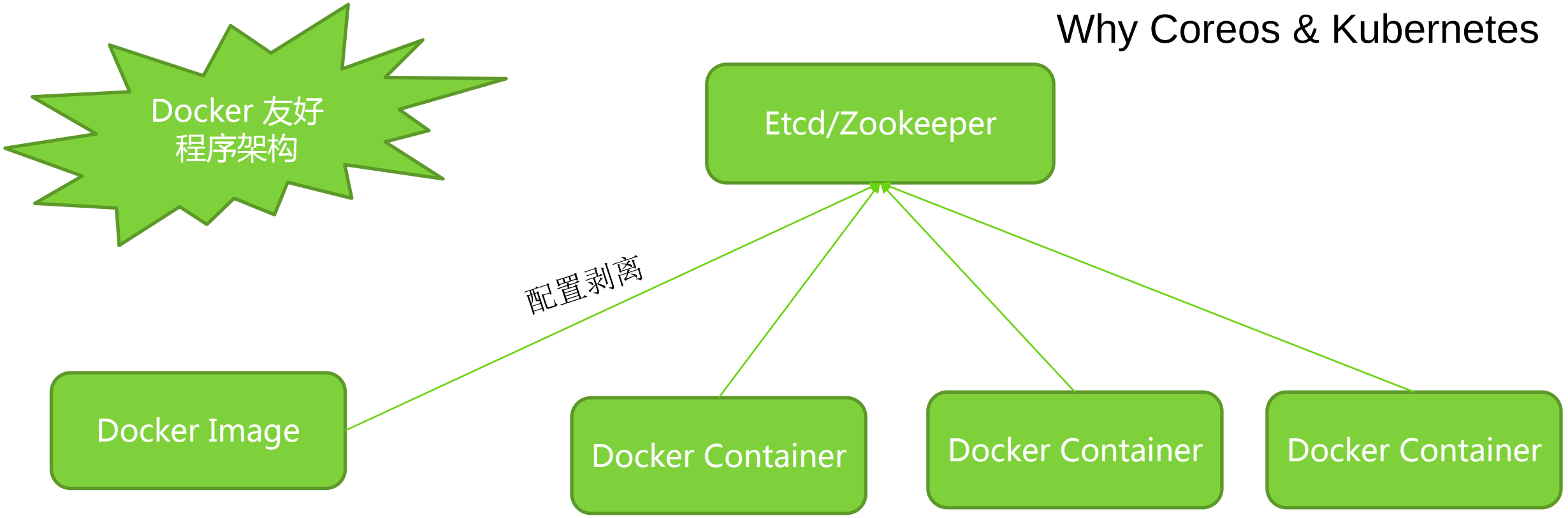
ssh server是否应该包含到镜像里

一个容器究竟运行几个程序？

程序参数和配置文件的问题

程序日志输出的问题

# 镜像制作中的常见问题


Why Coreos & Kubernetes
Docker 友好
程序架构
Etcd/Zookeeper
配置剥离
Docker Image
Docker Container
Docker Container
Docker Container

# Thanks

## FAQ时间