

# Docker Desktop for Windows Experience

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## Docker Desktop for Windows Experience

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  - 复制文件 (容器->主机)

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- 容器创建运行

  - zookeeper

  - nacos/nacos-server

  - mysql

  - jenkins

zookeeper 集群 (方式1)  
centos  
sonatype/nexus3  
gitlab/gitlab-ce  
km-pigeon/gds-instant-app  
Spring boot 打包为 Docker Image  
pom.xml 引入插件  
项目创建 src/main/docker 目录  
src/main/docker 下创建 Dockerfile 文件  
执行镜像构建命令

## 安装 Docker CE 之前

### 试验目标

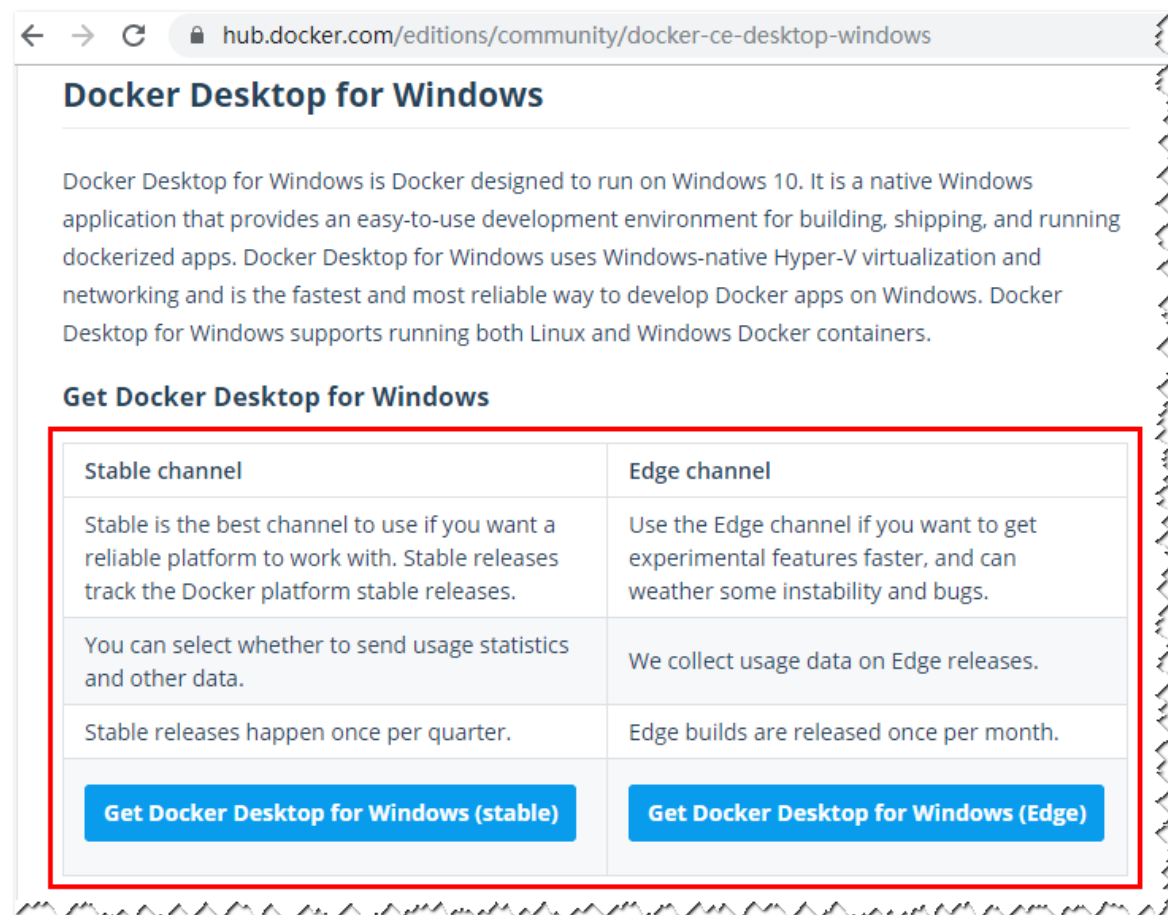
- 安装 Docker CE 并配置镜像加速，并能正常运行
- 启动 Docker 中的 Kubernetes，并能正常运行
- 配置 Kubernetes Dashboard，并能正常运行
- 了解熟悉过程、记录过程

### 系统要求

[Docker Desktop for Windows](#) 支持 64 位版本的 Windows 10 Pro，且必须[开启 Hyper-V](#)。

### 下载 Docker CE

点击以下链接下载 [Stable](#) 或 [Edge](#) 版本的 [Docker Desktop for Windows](#)。



← → ↻ 🔒 hub.docker.com/editions/community/docker-ce-desktop-windows

### Docker Desktop for Windows

Docker Desktop for Windows is Docker designed to run on Windows 10. It is a native Windows application that provides an easy-to-use development environment for building, shipping, and running dockerized apps. Docker Desktop for Windows uses Windows-native Hyper-V virtualization and networking and is the fastest and most reliable way to develop Docker apps on Windows. Docker Desktop for Windows supports running both Linux and Windows Docker containers.

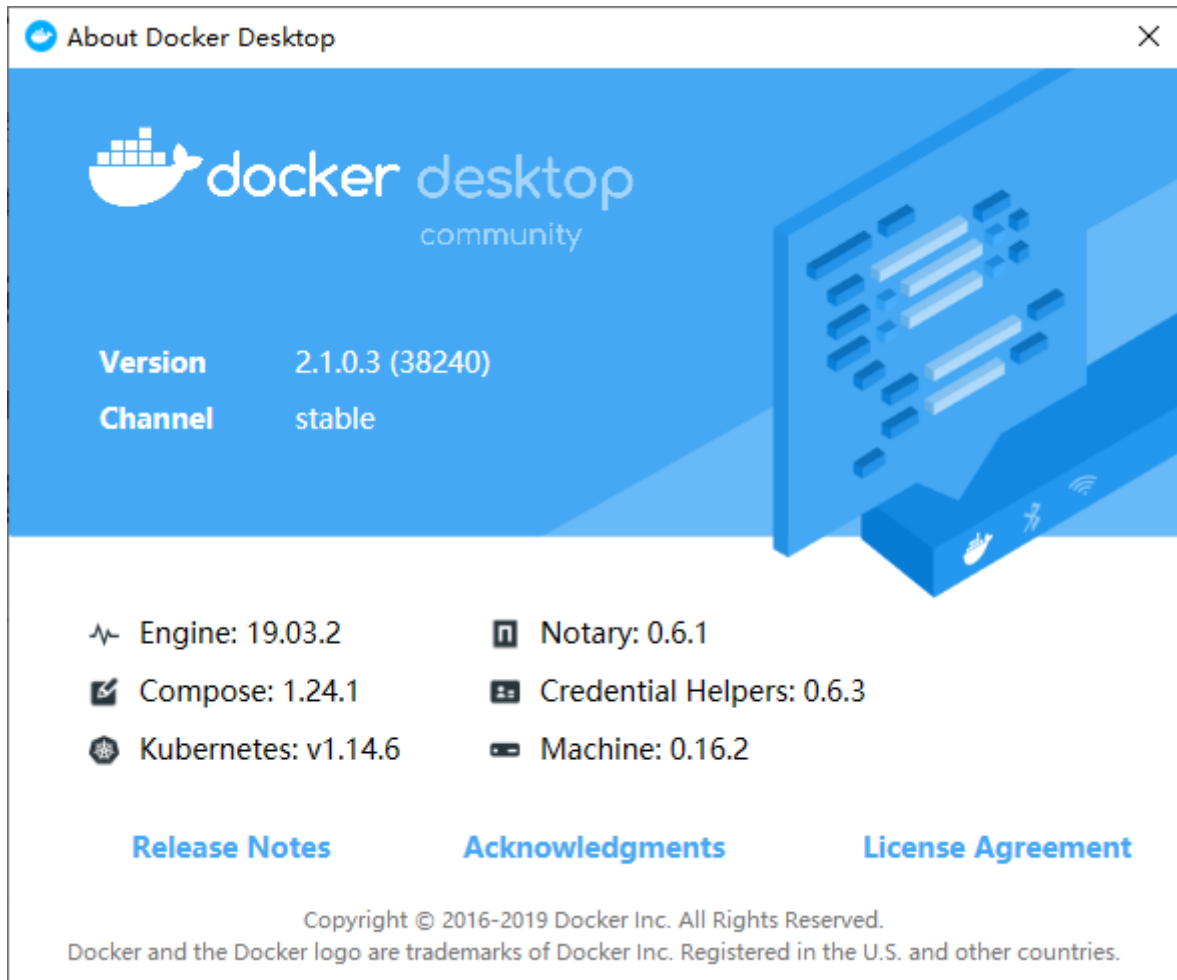
#### Get Docker Desktop for Windows

Stable channel	Edge channel
Stable is the best channel to use if you want a reliable platform to work with. Stable releases track the Docker platform stable releases.	Use the Edge channel if you want to get experimental features faster, and can weather some instability and bugs.
You can select whether to send usage statistics and other data.	We collect usage data on Edge releases.
Stable releases happen once per quarter.	Edge builds are released once per month.
<a href="#">Get Docker Desktop for Windows (stable)</a>	<a href="#">Get Docker Desktop for Windows (Edge)</a>

本文以下载 *Stable* 版本为例。

# 安装 Docker CE

- 下载好之后双击 `Docker for windows Installer.exe` 开始安装。
- 安装好后，查看 `About Docker Desktop`



## 配置镜像加速

如果在使用过程中发现拉取 Docker 镜像十分缓慢，可以配置 [Docker 国内镜像加速](#)。

- Azure 中国镜像 `https://dockerhub.azk8s.cn`
- 七牛云镜像 `https://reg-mirror.qiniu.com`
- 中科大镜像 `https://docker.mirrors.ustc.edu.cn`

Settings

General

Shared Drives

Advanced

Network

Proxies

**Daemon**

Kubernetes

Reset

Docker is running

Kubernetes is running

## Daemon

Configure the Docker daemon by typing a json docker daemon [configuration file](#).

☒ Basic  
☐ Experimental [features](#)

Insecure registries:

eg: my-registry.example:5000 or 127.0.0.0/8

Registry mirrors:

https://dockerhub.azk8s.cn  
https://reg-mirror.qiniu.com  
https://docker.mirrors.ustc.edu.cn  
eg: https://my-registry.example:5000

Docker will restart when applying these settings.

Apply

Settings

General

Shared Drives

Advanced

Network

Proxies

**Daemon**

Kubernetes

Reset

Docker is running

Kubernetes is running

## Daemon

Configure the Docker daemon by typing a json docker daemon [configuration file](#).

☒ Advanced  
**This can prevent Docker from starting. Use at your own risk!**

```
{  "registry-mirrors": [    "https://dockerhub.azk8s.cn",    "https://reg-mirror.qiniu.com",    "https://docker.mirrors.ustc.edu.cn"  ],  "insecure-registries": [],  "debug": true,  "experimental": false}
```

Docker will restart when applying these settings.

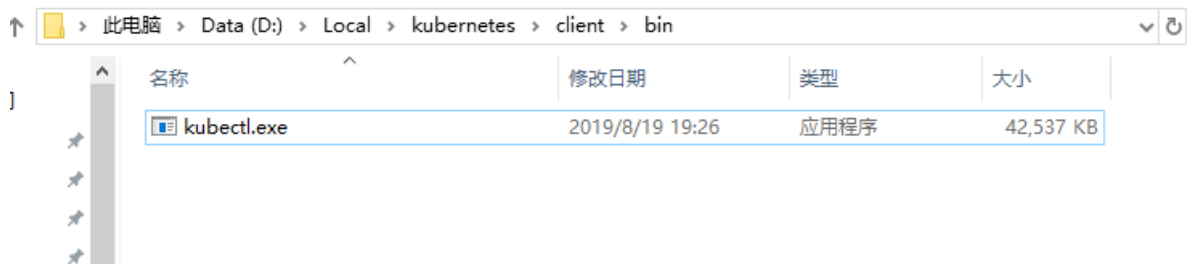
Apply

```
{  "registry-mirrors": [    "https://dockerhub.azk8s.cn",    "https://reg-mirror.qiniu.com",    "https://docker.mirrors.ustc.edu.cn"  ],  "insecure-registries": [],  "debug": true,  "experimental": false}
```

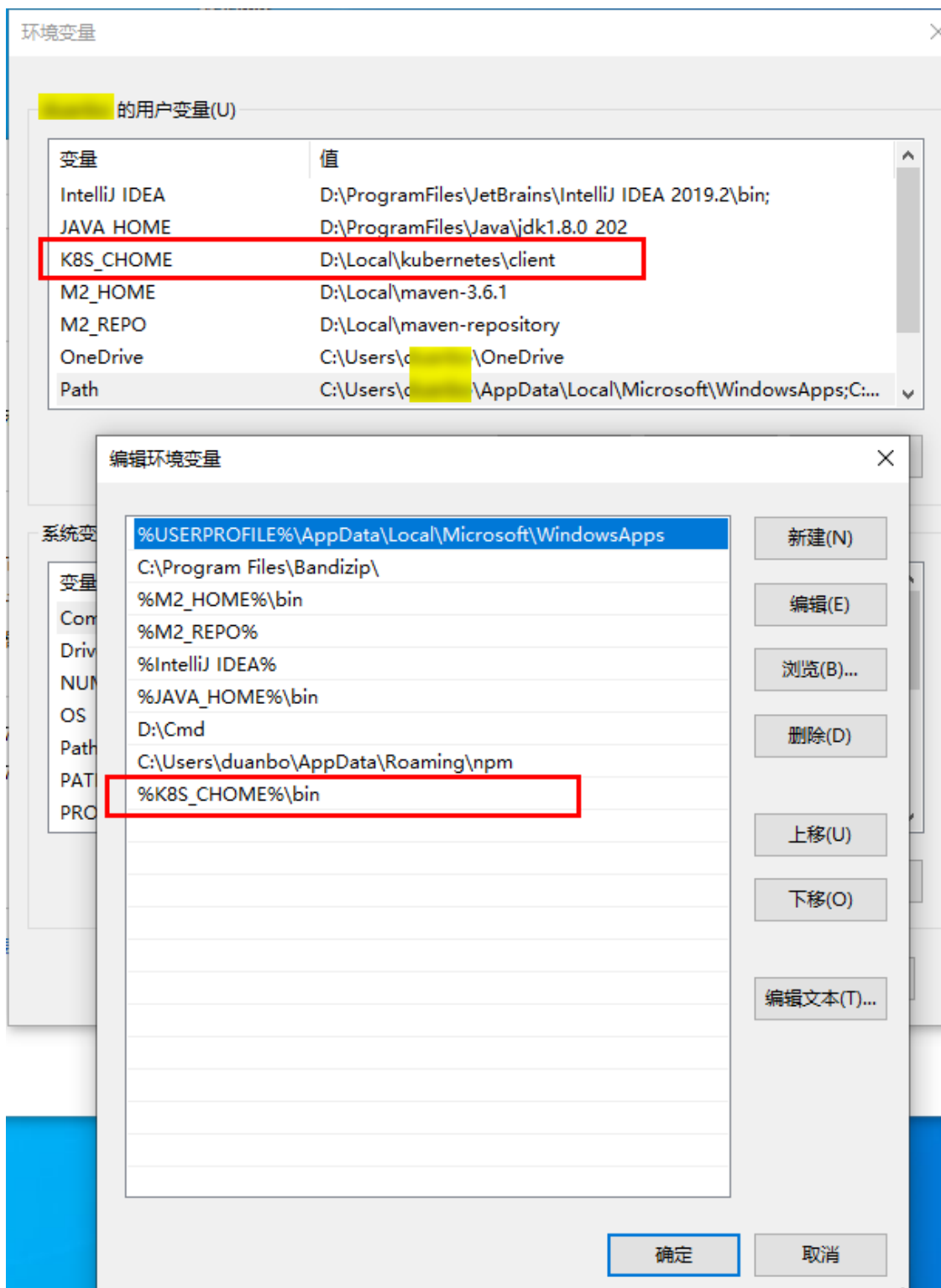
# 启用 Docker 中的 Kubernetes

## 安装 kubectl 命令

- 通过 Docker 的 `About Docker Desktop` 查看 kubernetes 的版本  
通过查看版本为 `kubernetes:v1.14.6` 。
- 下载 `kubernetes:v1.14.6` [kubernetes-client-windows-amd64.tar.gz](https://kubernetes.io/docs/tasks/tools/install-kubectl-windows/#install-kubectl) (这需要科学上网)  
其他的版本下可通过 <https://github.com/kubernetes/kubernetes> 中相应版本的 `CHANGELOG-1.xx.md` 文件获取。
- 解压 `kubernetes-client-windows-amd64.tar.gz`  
这里解压后目录为 `D:\Local\kubernetes\client\bin`



- 将 `kubectl` 加入到 `系统环境变量PATH` 中



- 执行 `kubect1` 命令检查是否OK

```
kubect1 version
```

```
管理员: Windows PowerShell
PS D:\duanbo\Desktop> kubect1 version
Client Version: version.Info{Major:"1", Minor:"14", GitVersion:"v1.14.6", GitCommit:"96fac5cd13a5dc064f7d9f4f23030a6aefa
ce6cc", GitTreeState:"clean", BuildDate:"2019-08-19T11:13:49Z", GoVersion:"go1.12.9", Compiler:"gc", Platform:"windows/a
md64"}
Server Version: version.Info{Major:"1", Minor:"14", GitVersion:"v1.14.6", GitCommit:"96fac5cd13a5dc064f7d9f4f23030a6aefa
ce6cc", GitTreeState:"clean", BuildDate:"2019-08-19T11:05:16Z", GoVersion:"go1.12.9", Compiler:"gc", Platform:"linux/amd
64"}
PS D:\duanbo\Desktop>
```

## 安装 kubernetes 镜像

- 可先参考 <https://github.com/AliyunContainerService/k8s-for-docker-desktop> 文档
- 通过 [AliyunContainerService/k8s-for-docker-desktop](https://github.com/AliyunContainerService/k8s-for-docker-desktop) 项目手工加载镜像，通过以下命令克隆项目  
(提示：会在执行命令的当前目录下创建 k8s-for-docker-desktop 目录)

```
git clone https://github.com/AliyunContainerService/k8s-for-docker-desktop
```

- 切换到 k8s-for-docker-desktop 目录，执行 `.\load_images.ps1` 命令（使用 PowerShell）  
等镜像文件 pull 完后，就可以激活 Docker 中的 Kubernetes 了。

```
.\load_images.ps1
```

这里 pull 的 Kubernetes 镜像为 1.14.6

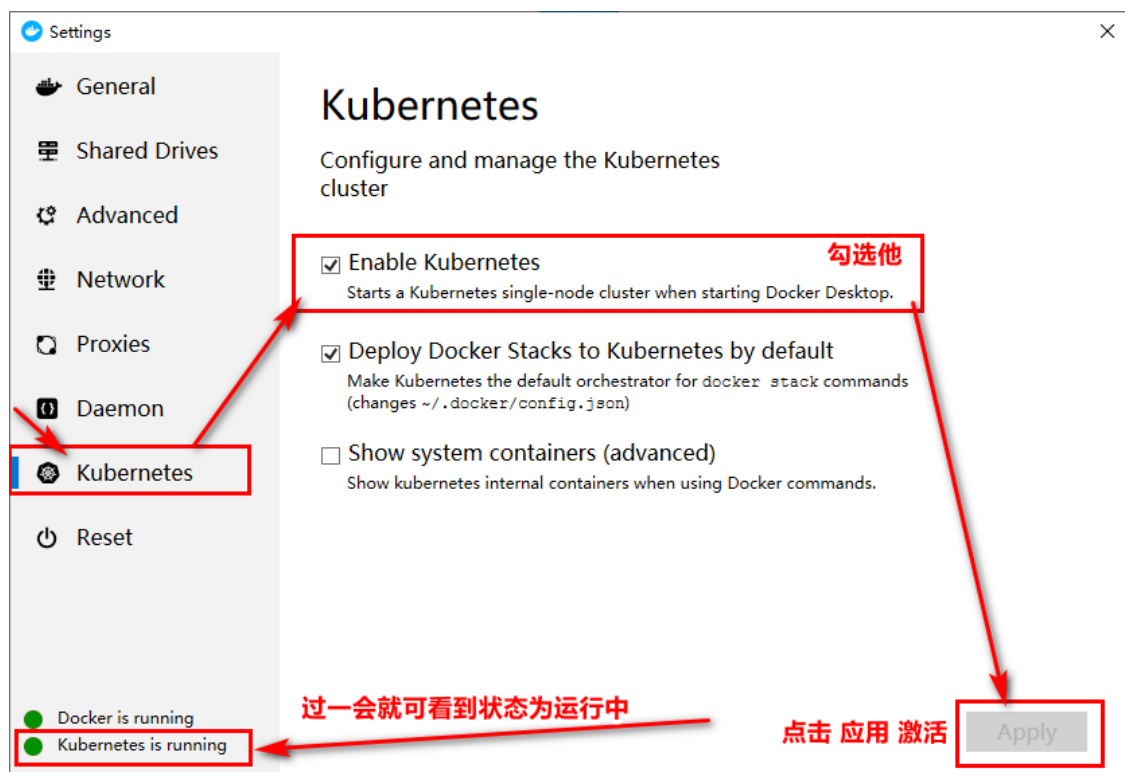
**注意，PowerShell 执行命令时可能出现以下错误：**

```
.\load_images.ps1 : 无法加载文件 D:\IdeaProjects\k8s-for-docker-  
desktop\load_images.ps1，因为在此系统上禁止运行脚本。
```

执行以下命令解决错误：

```
set-executionpolicy remotesigned
```

- Docker 中激活 Kubernetes



## 配置 Kubernetes Dashboard

### 可先参考的文档

- <https://github.com/AliyunContainerService/k8s-for-docker-desktop>
- <https://github.com/kubernetes/dashboard>

## 切换 Kubernetes 运行上下文

切换 Kubernetes 运行上下文至 `docker-desktop`

```
kubectl config use-context docker-desktop
```

## 验证 Kubernetes 集群状态

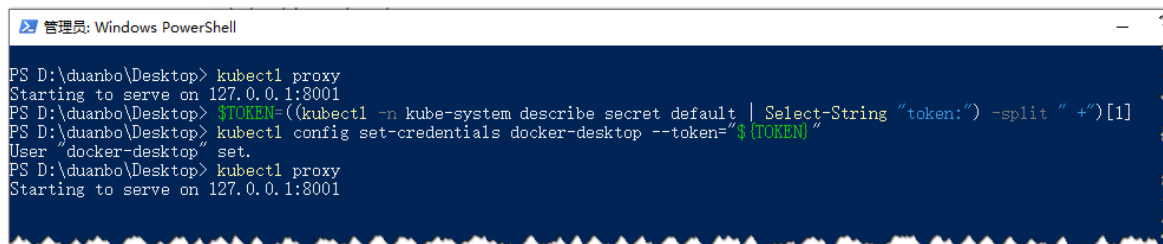
```
kubectl cluster-info  
kubectl get nodes
```

## 部署 Kubernetes dashboard

```
kubectl apply -f  
https://raw.githubusercontent.com/kubernetes/dashboard/v1.10.1/src/deploy/recommended/kubernetes-dashboard.yaml
```

## 开启 API Server 访问代理

```
kubectl proxy
```



```
管理员: Windows PowerShell  
PS D:\duanbo\Desktop> kubectl proxy  
Starting to serve on 127.0.0.1:8001  
PS D:\duanbo\Desktop> $TOKEN=((kubectl -n kube-system describe secret default | Select-String "token:" -split " ")[1]  
PS D:\duanbo\Desktop> kubectl config set-credentials docker-desktop --token="$TOKEN"  
User "docker-desktop" set.  
PS D:\duanbo\Desktop> kubectl proxy  
Starting to serve on 127.0.0.1:8001
```

## 访问 Kubernetes dashboard

- <http://localhost:8001/api/v1/namespaces/kube-system/services/https:kubernetes-dashboard:/proxy/#!/overview?namespace=default>
- <http://localhost:8001/api/v1/namespaces/kube-system/services/https:kubernetes-dashboard:/proxy/>

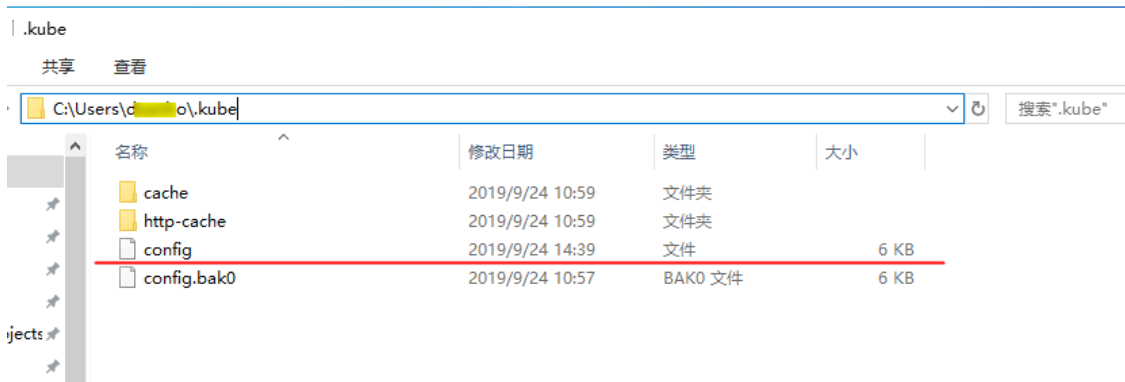
## 配置 kubeconfig (可跳过)

- 给配置 `C:\Users\XXX\.kube\config` 文件 `docker-desktop` 设置 `token`

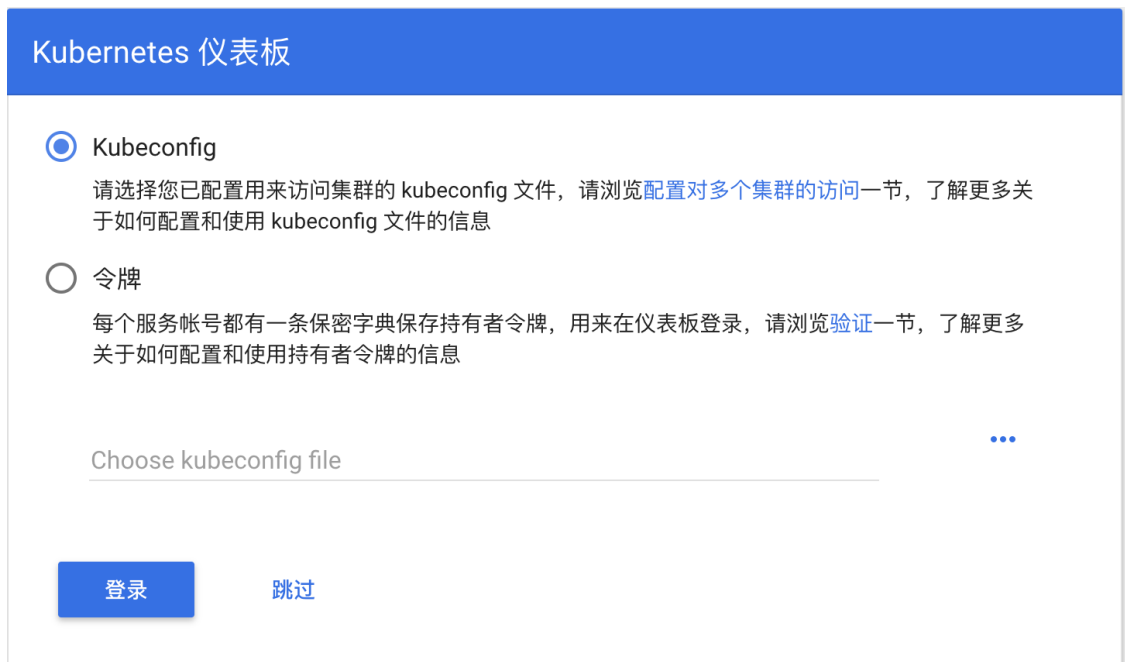
```
$TOKEN=((kubectl -n kube-system describe secret default | Select-String  
"token:") -split " ")[1]  
kubectl config set-credentials docker-desktop --token="$TOKEN"
```

**注意**，登录是出现 `Not enough data to create auth info structure` 时，重新执行本命令即可！

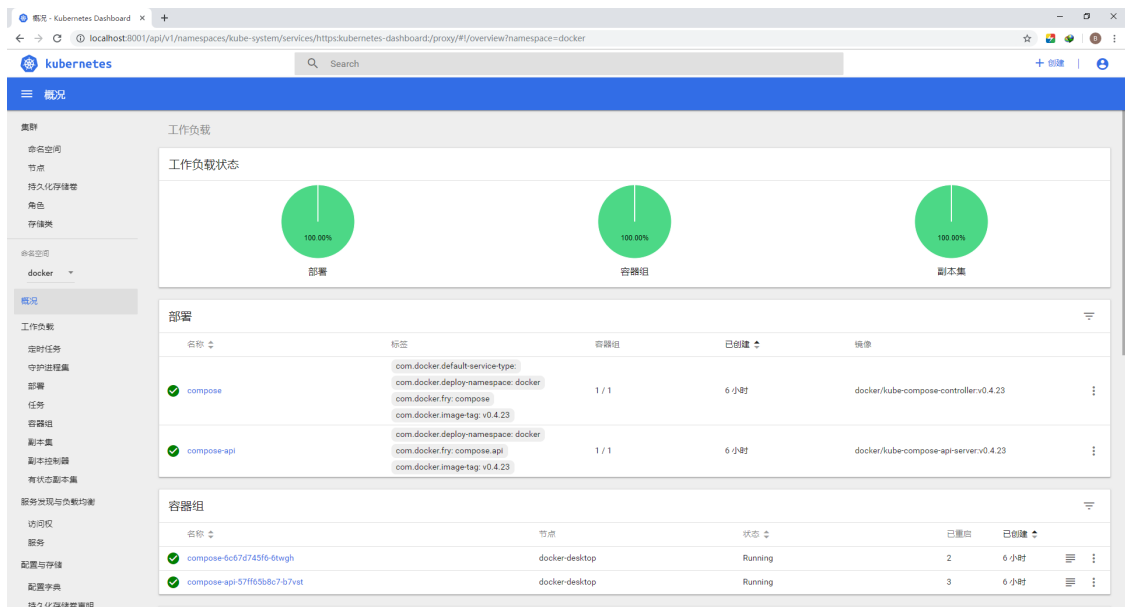




- 登录 dashboard 的时候选择 `C:\Users\xxx\.kube\config` 文件



- 点击 登录 成功



## 安装并运行容器（Redis）

- 本案例采用 Redis 演示

## 查找镜像

```
docker search redis[:5.5]
```

```
管理员: Windows PowerShell
PS D:\duanbo\Desktop> docker search redis
NAME                DESCRIPTION                STARS     OFFICIAL
AUTOMATED
redis                Redis is an open source key-value store that...  7344     [OK]
bitnami/redis        Bitnami Redis Docker Image  127
sameersbn/redis      77
grokzen/redis-cluster Redis cluster 3.0, 3.2, 4.0 & 5.0  57
rediscommander/redis-commander Alpine image for redis-commander - Redis man...  31
```

## 拉取镜像

```
docker pull redis[:5.5]
```

```
管理员: Windows PowerShell
xetamus/redis-resource      forked redis-resource      0
[OK]
PS D:\duanbo\Desktop> docker pull redis
Using default tag: latest
latest: Pulling from library/redis
b8f262c62ec6: Pull complete
93789b5343a5: Pull complete
49cdbb315637: Pull complete
2c1ff453e5c9: Pull complete
9341ee0a5d4a: Pull complete
770829e1df34: Pull complete
Digest: sha256:5dcccbb533dc0deacce4a02fe9035134576368452db0b4323b98a4b2ba2d3b302
Status: Downloaded newer image for redis:latest
docker.io/library/redis:latest
PS D:\duanbo\Desktop>
```

## 查看本地镜像

```
docker images
```

```
管理员: Windows PowerShell
Status: Downloaded newer image for redis:latest
docker.io/library/redis:latest
PS D:\duanbo\Desktop> docker images
REPOSITORY          TAG                IMAGE ID           CREATED
SIZE
redis                latest            63130206b0fa      11 days ago
98.2MB
k8s.gcr.io/kube-proxy v1.14.6           ed8adf767eeb      5 weeks ago
82.1MB
k8s.gcr.io/kube-apiserver v1.14.6          0e422c9884cf      5 weeks ago
209MB
k8s.gcr.io/kube-scheduler v1.14.6          d27987bc993e      5 weeks ago
81.6MB
k8s.gcr.io/kube-controller-manager v1.14.6          4bb274b1f2c3      5 weeks ago
```

## 创建并运行容器

```
docker run -d --restart=always --name redis -p 6379:6379 -v
/D/DockerData/redis/data:/data redis:latest --appendonly yes --requirepass
"123456"
```

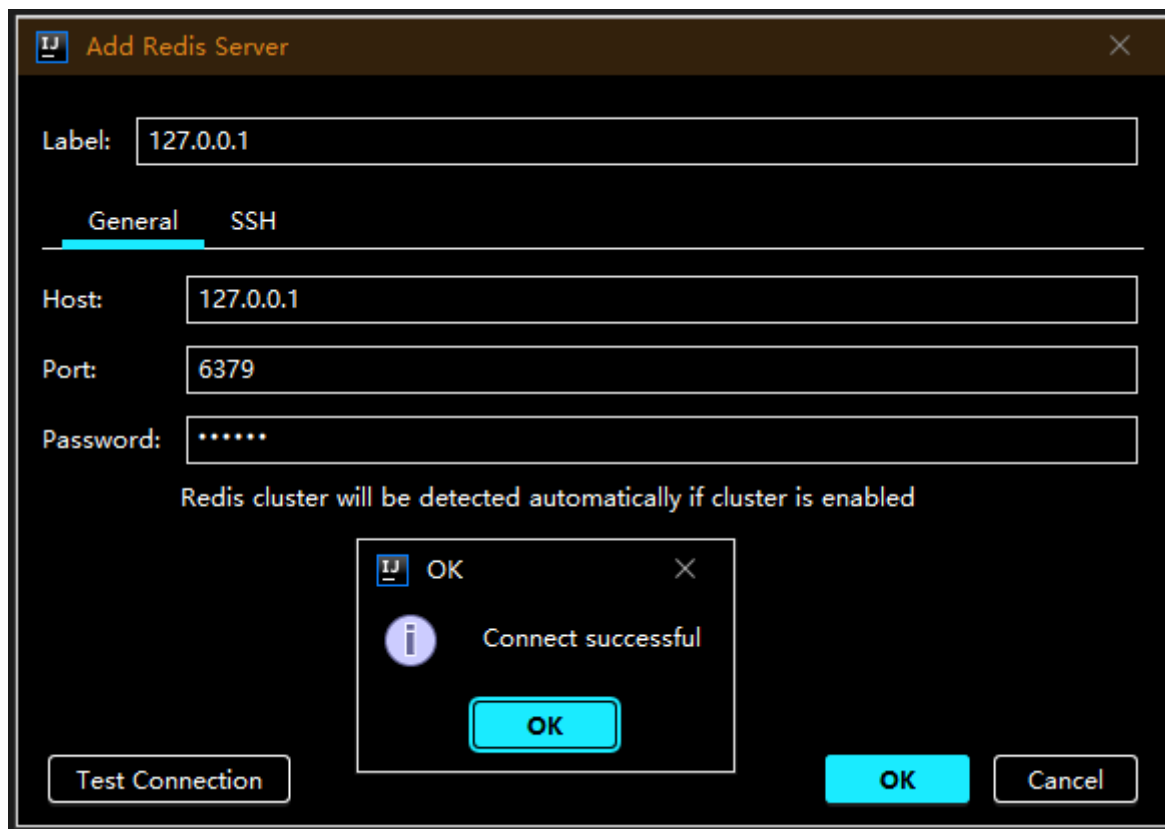
```
管理员: Windows PowerShell
PS D:\duanbo\Desktop> docker run -d --restart=always --name redis -p 6379:6379 -v /D/DockerData/redis/data:/data redis:latest --appendonly yes --requirepass "d...bo"
4515b4050f8443b47f948af77e80fbc1940a0abc6858bf3966bddce8e0c6f9b4
PS D:\duanbo\Desktop>
```

## 列出容器

```
docker ps -as
```

```
管理员: Windows PowerShell
PS D:\duanbo\Desktop> docker ps -as
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
4515b4050f84   redis:latest   "docker-entrypoint.s..." 2 minutes ago Up 2 minutes  0.0.0.0:6379->6379/tcp
redis         0B (virtual 98.2MB)
PS D:\duanbo\Desktop>
```

## 客户端接连 redis（检查可用）



## 用到的 Docker 相关命令

### 命令大集

- <https://www.runoob.com/docker/docker-command-manual.html>
- <https://www.jianshu.com/p/afb20541d781>
- <https://www.w3xue.com/manual/docker/>

### 查找镜像

```
docker search redis[:5.5]
```

## 拉取镜像

```
docker pull redis[:5.5]
```

## 查看本地镜像

```
docker images
```

## 删除本地镜像

```
docker rmi <IMAGE ID>
```

## 创建并运行容器

```
docker run -help
```

## 停止运行镜像

- NAMES 可能过 docker ps -as 命令获得

```
docker stop [ID/NAMES]
```

## 删除运行镜像

- NAMES可能过 docker ps -as 命令获得

```
docker rm [ID/NAMES]
```

## 获取容器的日志

- NAMES可能过 docker ps -as 命令获得

```
docker logs [ID/NAMES]
```

## 在运行的容器中执行命令

```
docker exec -it [ID/NAMES] bash
```

```
docker exec -it [ID/NAMES] /bin/sh
```

## 列出容器

```
docker ps -as
```

## 复制文件（主机->容器）

- 从主机复制到容器 docker cp [OPTIONS] SRC\_PATH|- CONTAINER:DEST\_PATH

```
docker cp /host/path/target [ID/NAMES]:/file/path/within/container
```

## 复制文件（容器->主机）

- 从容器复制到主机 `docker cp [OPTIONS] CONTAINER:SRC_PATH DEST_PATH|-`

```
docker cp [ID/NAMES]:/file/path/within/container /host/path/target
```

## 查看容器所有状态信息

```
docker inspect [NAMES]
```

## 查看容器IP

```
docker inspect --format='{{.NetworkSettings.IPAddress}}' [ID/NAMES]
```

## 容器运行状态

```
docker inspect --format '{{.Name}} {{.State.Running}}' [NAMES]
```

## docker network 命令

```
docker network --helper  
docker network ls
```

## 容器创建运行

### zookeeper

```
docker run -d --restart=always --name zookeeper -p 2181:2181 -v  
/D/DockerData/zookeeper/zk1/data:/data -v  
/D/DockerData/zookeeper/zk1/data/log:/data/log -e "TZ=Asia/Shanghai"  
zookeeper:latest
```

### nacos/nacos-server

```
docker run -d --restart=always --name nacos --env MODE=standalone -p 8848:8848  
nacos/nacos-server:latest
```

### mysql

```
docker run -d --restart=always --name mysql -p 3306:3306 -v  
/D/DockerData/mysql/mysql:/var/lib/mysql -v  
/D/DockerData/mysql/conf:/etc/mysql/conf.d -e MYSQL_ROOT_PASSWORD=duanbo  
mysql:latest --character-set-server=utf8mb4 --collation-  
server=utf8mb4_unicode_ci
```

# jenkins

```
docker run -d --restart=always --name jenkins -p 8088:8080 --restart always -v /D/DockerData/jenkins/jenkins_home:/var/jenkins_home -t jenkins:latest
```

## zookeeper 集群 (方式1)

- 采用 `host.docker.internal` 访问宿机

好像是 18.03 版本开始支持 `host.docker.internal`

```
host.docker.internal
```

- ZOO\_SERVERS 中 `server.x` 参数的地址后面一定要配置 `;2181` 端口, 否则成功了也连接不了

没有添加 `;2181` 怎么搞都连接不了 (`telnet` 直接退出), 后来搞个可访方的单个 `zookeeper` 查看它的 `/conf/zoo.cfg` 配置文件发现参数 `server.1=localhost:2888:3888;2181` 后面带了 `;2181` 看到这个好像明白了为什么不能访问!

这里使用的是 `zookeeper 3.5.5` 版本, 也许是版本的区别。

```
server.1=0.0.0.0:2888:3888;2181
```

- `docker run` 创建并运行 zookeeper 集群 (均正常访问 2181、2182、2183 端口)

### 运行节点zk1

```
docker run -d --restart always --name zk1 -p 2181:2181 -p 2887:2888 -p 3887:3888 -v /D/DockerData/zookeeper/zk1/data:/data -v /D/DockerData/zookeeper/zk1/data/log:/data/log -e "TZ=Asia/Shanghai" -e "ZOO_MY_ID=1" -e "ZOO_SERVERS=server.1=0.0.0.0:2888:3888;2181 server.2=host.docker.internal:2888:3888;2182 server.3=host.docker.internal:2889:3889;2183" zookeeper:latest
```

### 运行节点zk2

```
docker run -d --restart always --name zk2 -p 2182:2181 -p 2888:2888 -p 3888:3888 -v /D/DockerData/zookeeper/zk2/data:/data -v /D/DockerData/zookeeper/zk2/data/log:/data/log -e "TZ=Asia/Shanghai" -e "ZOO_MY_ID=2" -e "ZOO_SERVERS=server.1=host.docker.internal:2887:3887;2181 server.2=0.0.0.0:2888:3888;2181 server.3=host.docker.internal:2889:3889;21813" zookeeper:latest
```

### 运行节点zk3

```
docker run -d --restart always --name zk3 -p 2183:2181 -p 2889:2888 -p 3889:3888 -v /D/DockerData/zookeeper/zk3/data:/data -v /D/DockerData/zookeeper/zk3/data/log:/data/log -e "TZ=Asia/Shanghai" -e "ZOO_MY_ID=3" -e "ZOO_SERVERS=server.1=host.docker.internal:2887:3887;2181 server.2=host.docker.internal:2888:3888;2182 server.3=0.0.0.0:2888:3888;2181" zookeeper:latest
```

- 可能出现的问题

配置 `-v /D/DockerData/zookeeper/zk1/conf:/conf` 出现如下错误:

好像是 `log4j.properties` 文件没有造成的问题，查看没有配置 `-v` `/D/DockerData/zookeeper/zk1/conf:/conf` 属性正常时查看 `/conf` 下的文件是有 `log4j.properties`，而配置 `-v /D/DockerData/zookeeper/zk1/conf:/conf` 属性后 `/conf` 是没有 `log4j.properties`，判断应该是这个问题导致的错误

只能先去掉 `-v /D/DockerData/zookeeper/zk1/conf:/conf`

或改用 `-v /D/DockerData/zookeeper/zk1/conf/zoo.cfg:/conf/zoo.cfg`

```
Using config: /conf/zoo.cfg
log4j:WARN No appenders could be found for logger
(org.apache.zookeeper.server.quorum.QuorumPeerConfig).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for
more info.
```

使用容器间访问 `docker network create inet` 和 `--network inet --network-alias zk1` 也不行，容器间 `3888` 访问不通，这个方法实验失败

## centos

```
docker run --privileged --cap-add SYS_ADMIN -e container=docker -it --name
centos -d --restart=always centos:latest /usr/sbin/init
```

## sonatype/nexus3

```
docker run -d -p 8081:8081 --restart=always --name nexus -v /D/DockerData/nexus-
data:/nexus-data sonatype/nexus3:latest
```

## gitlab/gitlab-ce

- <https://juejin.im/post/5cc1df885188252d6c43fd91>

```
docker run --detach --hostname gitlab.boazy.com --publish 444:443 --publish
88:80 --publish 23:22 --name gitlab --restart always --volume
/D/DockerData/gitlab/config:/etc/gitlab --volume
/D/DockerData/gitlab/logs:/var/log/gitlab --volume
/D/DockerData/gitlab/data:/var/opt/gitlab gitlab/gitlab-ce:latest
```

## km-pigeon/gds-instant-app

```
docker run -p 9903:9903 -d --restart=always --name gds-instant-app km-
pigeon/gds-instant-app:latest
```

## Spring boot 打包为 Docker Image

### pom.xml 引入插件

```
<!-- Docker maven plugin -->
<plugin>
  <groupId>com.spotify</groupId>
  <artifactId>docker-maven-plugin</artifactId>
```

```

<version>1.2.1</version>
<configuration>
  <imageName>km-pigeon/${project.artifactId}</imageName>
  <!--<imageTags>
    <imageTag>${project.version}</imageTag>
  </imageTags>
  <forceTags>true</forceTags>-->
  <dockerDirectory>src/main/docker</dockerDirectory>
  <resources>
    <resource>
      <targetPath>/</targetPath>
      <directory>${project.build.directory}</directory>
      <include>${project.build.finalName}.jar</include>
    </resource>
  </resources>
</configuration>
</plugin>

```

- docker-maven-plugin 下载不了时配置 settings.xml 文件 pluginGroups 节点中添加以下配置信息：

```
<pluginGroup>com.spotify</pluginGroup>
```

## 项目创建 src/main/docker 目录

- src/main/docker

## src/main/docker 下创建 Dockerfile 文件

- src/main/docker/Dockerfile

```

FROM openjdk:8-jdk-alpine
VOLUME /tmp
ADD gds-instant-app-*.jar /home/webapps/gds-instant-app/gds-instant-app.jar
EXPOSE 9903
ENTRYPOINT ["java","-Djava.security.egd=file:/dev/./urandom", "-Duser.timezone=Asia/Shanghai","-jar","/home/webapps/gds-instant-app/gds-instant-app.jar"]

```

## 执行镜像构建命令

- mvn clean package docker:build

```
mvn clean package docker:build
```