

# Harbor企业级镜像仓库

## 一、基于Harbor搭建仓库

### 1. Harbor简介

Harbor是VMware公司开源的一个企业级Docker Registry项目，项目地址：<https://github.com/goharbor/harbor>

Harbor工程是一个企业级的镜像服务器，用于存储和分发Docker镜像。Harbor扩展了开源软件Docker Distribution，添加了如security、identity和management等功能。作为一个企业级的私有镜像仓库，Harbor提供了更好的性能和安全性。Harbor支持建立多个registries,并提供这些仓库间镜像的复制能力。Harbor也提供了更加先进的安全特性，比如用户管理、访问控制、活动审计

Harbor特性：

- **基于角色的访问控制:** users 和 repositories 都是以projects的方式组织的。在一个project下面，每一个用户对镜像有不同的全向。
- **基于策略的镜像复制:** 在多个registry之间镜像可以同步，并且在出现错误的时候可以进行自动重试。在负载均衡、高可用性、多数据中心和异构云环境下都表现出色。
- **脆弱性扫描(Vulnerability Scanning):** Harbor会周期性的扫描镜像，然后警告用户相应的脆弱性
- **LDAP/AD支持:** Harbor可以和已存在的企业版LDAP/AD系统集成，以提供用户认证和管理
- **镜像删除 & 垃圾回收:** Images可以被删除，然后回收它们所占用的空间
- **可信任(Notary):** 可以确保镜像的真实性
- **用户界面(Graphical user portal):** 用户可以人容易的浏览、搜索仓库和管理工程
- **审计(Auditing):** 所有对仓库的操作都会被跟踪记录
- **RESTful API:** 对于大部分的管理操作都提供了RESTful API，很容易和外部系统进行集成
- **易部署:** 提供了离线和在线安装

### 2. Harbor的安装

此文档只针对默认端口80进行说明（自定义端口需要修改docker-compose.yml配置以及端口映射）

在[Harbor Release](#)页面下载对应的离线安装包，目前我们下载最新版本 v2.5.0

本机环境

```
[root@localhost harbor]# docker -v
Docker version 20.10.12, build e91ed57
[root@localhost harbor]# docker-compose -v
docker-compose version 1.29.2, build 5becea4c
```

### (1) 解压到指定目录

```
[root@localhost harbor]# tar -zxvf harbor-offline-installer-v2.5.0.tgz -C /test/
[root@localhost harbor]# cd /test/harbor/
[root@localhost harbor]# ls -a
.  ..  common.sh  harbor.v2.5.0.tar.gz  harbor.yml.tpl  install.sh
LICENSE  prepare
```

### (2) 设置主机名 (可忽略此步骤)

```
[root@localhost harbor]# hostnamectl set-hostname www.myharbor.com
[root@localhost harbor]# hostname
www.myharbor.com
```

```
[root@localhost harbor]# vim /etc/hosts
192.168.200.104 www.myharbor.com
# 测试能否ping通 www.myharbor.com 主机
[root@localhost harbor]# ping www.myharbor.com
PING www.myharbor.com (192.168.200.104) 56(84) bytes of data:
64 bytes from www.myharbor.com (192.168.200.104): icmp_seq=1 ttl=64
time=0.026 ms
64 bytes from www.myharbor.com (192.168.200.104): icmp_seq=2 ttl=64
time=0.031 ms
```

### (3) 修改Harbor配置文件

```
[root@localhost harbor]# cp harbor.yml.tpl harbor.yml
[root@localhost harbor]# vim harbor.yml
```

① `hostname`: [www.myharbor.com](http://www.myharbor.com) #修改主机名

② `https`: 删除https相关配置

```
hostname: www.myharbor.com #修改主机名，也可使用IP地址
# https:                  # 注释掉证书，不使用证书就需要注释
# https port for harbor, default is 443
# port: 443
# The path of cert and key files for nginx
# certificate: /your/certificate/path
# private_key: /your/private/key/path
harbor_admin_password: Harbor12345 # 默认登录密码

# 以上这些需要修改，其余保持默认
```

### (4) 启动脚本安装

```
#查看80端口是否被占用，如果被占用，则需修改harbor.yml配置文件的端口，或者关闭当前占用端口的进程
[root@localhost harbor]# lsof -i:80
```

```
# 启动脚本进行安装
[root@localhost harbor]# ./install.sh

[Step 0]: checking if docker is installed ...

Note: docker version: 20.10.12

[Step 1]: checking docker-compose is installed ...

Note: docker-compose version: 1.29.2

[Step 2]: loading Harbor images ...
# .....安装过程省略
✓ ----Harbor has been installed and started successfully.----

# 安装完成会自动启动很多容器
[root@localhost harbor]# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
98eae391b685	goharbor/harbor-jobservice:v2.5.0	"/harbor/entrypoint..."	18 minutes ago	Up 18 minutes (healthy)	0.0.0.0:80->8080/tcp, :::80->8080/tcp	harbor-jobservice
592993763d22	goharbor/nginx-photov2.5.0	"nginx -g 'daemon of..."	18 minutes ago	Up 18 minutes (healthy)		nginx
02019713f6d6	goharbor/harbor-core:v2.5.0	"/harbor/entrypoint..."	18 minutes ago	Up 18 minutes (healthy)		harbor-core
c16de9d47b8a	goharbor/harbor-registryctl:v2.5.0	"/home/harbor/start..."	18 minutes ago	Up 18 minutes (healthy)		registryctl
9e959144a659	goharbor/registry-photov2.5.0	"/home/harbor/entryp..."	18 minutes ago	Up 18 minutes (healthy)		registry
38f216ff9856	goharbor/harbor-portal:v2.5.0	"nginx -g 'daemon of..."	18 minutes ago	Up 18 minutes (healthy)		harbor-portal
2ee41334495f	goharbor/redis-photov2.5.0	"redis-server /etc/r..."	18 minutes ago	Up 18 minutes (healthy)		redis
e21225f14441	goharbor/harbor-db:v2.5.0	"/docker-entrypoint..."	18 minutes ago	Up 18 minutes (healthy)		harbor-db
6740f707a413	goharbor/harbor-log:v2.5.0	"/bin/sh -c /usr/loc..."	18 minutes ago	Up 18 minutes (healthy)	127.0.0.1:1514->10514/tcp	harbor-log

## (5) 修改Windows访问端的DNS域名配置

C:\Windows\System32\drivers\etc

此电脑 > 本地磁盘 (C:) > Windows > System32 > drivers > etc

名称	修改日期	类型	大小
hosts	2022/4/28 10:21	文件	1 KB

\*C:\Windows\System32\drivers\etc\hosts - Notepad++

文件(E) 编辑(E) 搜索(S) 视图(V) 编码(N) 语言(L) 设置(O) 工具(O) 宏(M) 运行(R) 插件(P) 窗口(W)

2

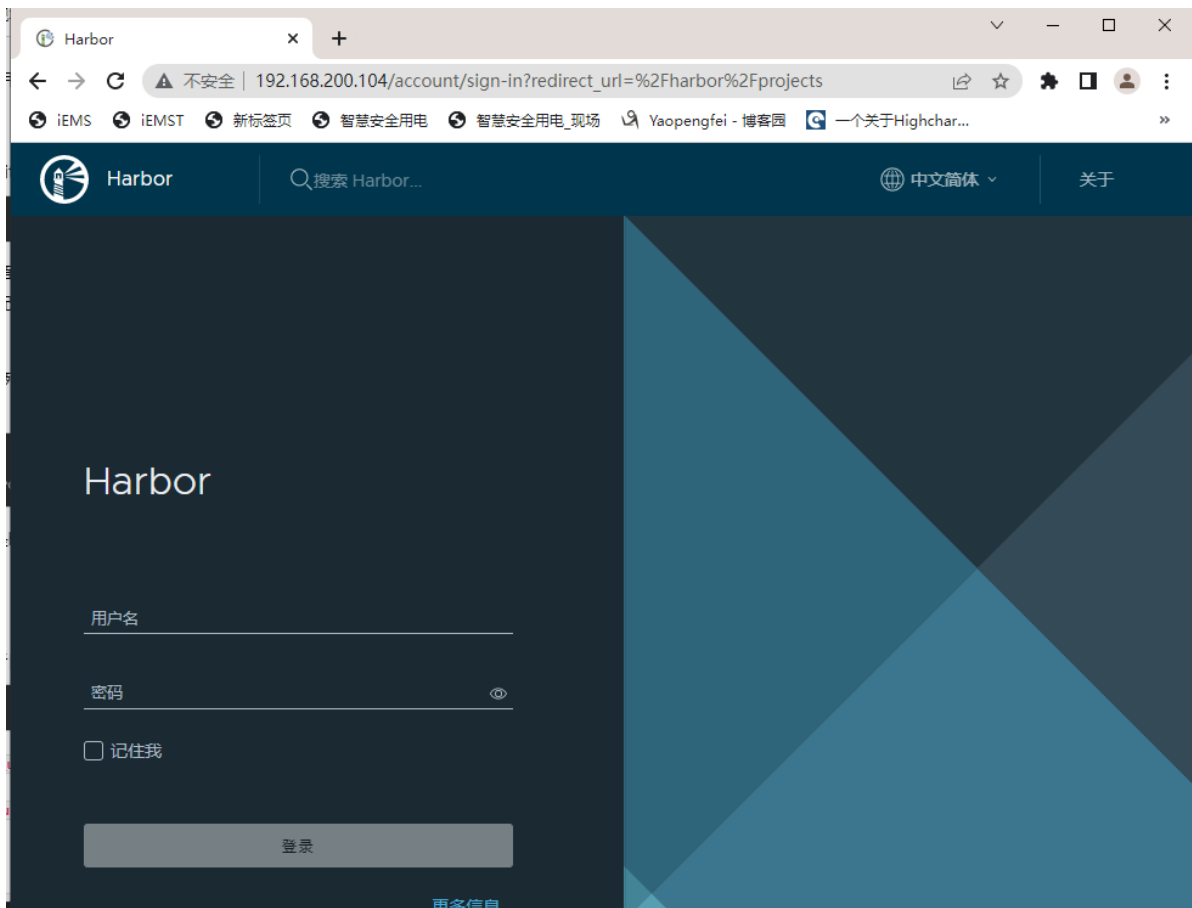
```
1 191.0.0.156      CETSOFT-SVR1
2 # Added by Docker Desktop
3 172.17.6.145    host.docker.internal
4 172.17.6.145    gateway.docker.internal
5 # To allow the same kube context to work on the host and
6 # the container:
7 # 127.0.0.1      kubernetes.docker.internal
8 # End of section
9 192.168.200.104 www.myharbor.com
10 192.168.200.101 www.ypharbor.com
11 192.168.200.101 nginx.itheima.com127.0.0.1
12 activate.navicat.com
13 140.82.113.3    github.com
14 185.199.111.153 assets-cdn.github.com
15 199.232.69.194  github.global.ssl.fastly.net
```

length: 506 lines: Ln: 8 Col: 1 Sel: 32 | 1 Windows (CR LF) UTF-8-BOM INS

## (6) 测试访问

可使用ip: port来访问, 也可以使用域名访问

例如: 192.168.200.104 或者 [www.myharbor.com](http://www.myharbor.com)



### 3. Harbor相关命令

(1) 停止Habor

```
docker-compose stop
```

(2) 重启Habor

```
docker-compose start
```

(3) 配置更新

如果要改变Harbor的配置，首先要停止当前已存在的Harbor实例，然后更新harbor.cfg。然后再运行 prepare 脚本更新配置文件，最后再重新创建并启动Harbor实例

```
sudo docker-compose down -v  
vim harbor.yml  
sudo prepare  
sudo docker-compose up -d
```

(4) 移除Harbor容器，但保留文件系统上的image data及Harbor数据库

```
docker-compose down -v
```

(5) 移除Harbor数据库及image data(用于干净环境下Harbor重装)

```
rm -rf /data/database
rm -rf /data/registry
```

(6) Harbor中push/pull镜像

- 确认/etc/docker/daemon.json配置

注意: 如果如下错误, 则需要修改/etc/docker/daemon.json文件

```
Harbor Error response from daesmon: Get http://reg.zll.com/v2/: dial tcp
192.168.243.138:80: connect: connection refused
```

/etc/docker/daemon.json

```
{
  "registry-mirrors": ["https://kn0t2bca.mirror.aliyuncs.com"],
  "insecure-registries": ["192.168.200.104"]
}
```

- 确认 /usr/lib/systemd/system/docker.service配置

注意: 如果如下错误, 则需要删除daemon.json或者docker.service的nsecure-registries配置 (只需配置一次), 重复配置则会报错 (出现以下错误也有可能是daemon.json格式不正确)

```
Job for docker.service failed because start of the service was attempted
too often. See "systemctl status docker.service" and "journalctl -xe" for
details.
```

/usr/lib/systemd/system/docker.service

追加--insecure-registry 192.168.200.104

```
[root@www system]# cat /usr/lib/systemd/system/docker.service | grep
ExecStart
ExecStart=/usr/bin/dockerd -H fd:// --
containerd=/run/containerd/containerd.sock --insecure-registry
192.168.200.104
```

- 登录Harbor

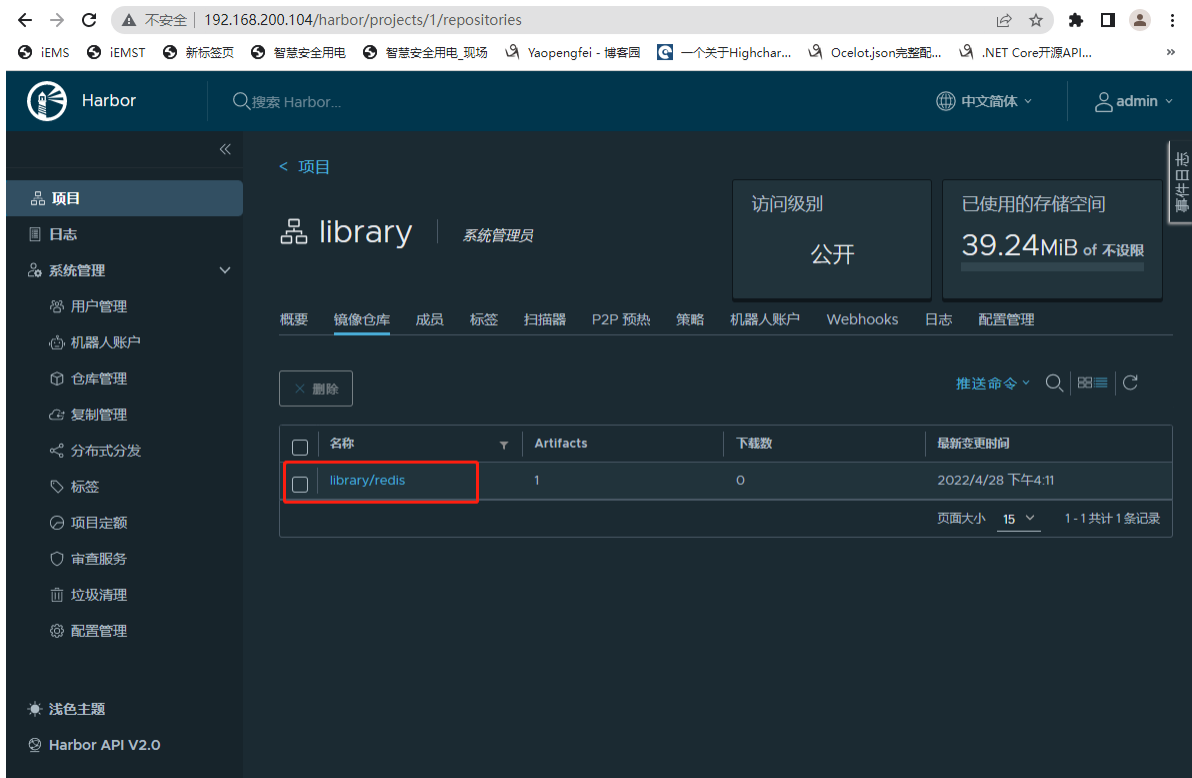
```
[root@www ~]# systemctl daemon-reload
[root@www ~]# systemctl restart docker
[root@www ~]# docker login 192.168.200.104
Username: admin
Password:
WARNING! Your password will be stored unencrypted in
/root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-
store

Login Succeeded
```

- 上传镜像

```
# 重新为镜像打tag,这里我们用Harbor中的默认库
[root@www harbor]# docker tag redis 192.168.200.104/library/redis:alpine
[root@www harbor]# docker images | grep redis
goharbor/redis-photon                               v2.5.0
  1e00fcc9ae63   3 weeks ago
192.168.200.104/library/redis                         alpine
  7614ae9453d1   4 months ag
redis                                                  latest
  7614ae9453d1   4 months ag
# 上传镜像到Harbor
[root@www harbor]# docker push 192.168.200.104/library/redis:alpine
The push refers to repository [192.168.200.104/library/redis]
8e5669d83291: Pushed
9975392591f2: Pushed
529cdb636f61: Pushed
4b8e2801e0f9: Pushed
9b24afeb7c2f: Pushed
2edcec3590a4: Pushed
alpine: digest:
sha256:563888f63149e3959860264a1202ef9a644f44ed6c24d5c7392f9e2262bd3553
size: 1573
```

登录192.168.200.104查看镜像仓库



## • 下载镜像

### # 删除本地镜像

```
[root@www harbor]# docker rmi redis
Untagged: redis:latest
Untagged:
redis@sha256:db485f2e245b5b3329fdc7eff4eb00f913e09d8feb9ca720788059fdc2ed8339
```

### # 从Harbor镜像仓库拉去镜像

```
[root@www harbor]# docker pull 192.168.200.104/library/redis:alpine
alpine: Pulling from library/redis
Digest:
sha256:563888f63149e3959860264a1202ef9a644f44ed6c24d5c7392f9e2262bd3553
Status: Image is up to date for 192.168.200.104/library/redis:alpine
192.168.200.104/library/redis:alpine
```

### # 查看本地镜像版本

```
[root@www harbor]# docker ps | grep redis
297156f16ad7 goharbor/redis-photon:v2.5.0 "redis-server /etc/r..." 12
minutes ago Up 12 minutes (healthy) redis
```