docker负载均衡{Docker Compose 部署Nginx服务实现负载均衡}**

1、compose简介

Compose是Docker容器进行编排的工具，定义和运行多容器的应用，可以一条命令启动多个容器，使用Docker Compose，不再需要使用shell脚本来启动容器。

Compose通过一个配置文件来管理多个Docker容器，在配置文件中，所有的容器通过services来定义，然后使用docker-compose脚本来启动，停止和重启应用。

docker-compose默认的模板文件是 docker-compose.yml，其中定义的每个服务都必须通过image 指令指定镜像或 build指令（需要Dockerfile）来自动构建镜像。

啥是负载均衡?

负载均衡是高可用网络基础架构的关键组件，通常用于将工作负载分布到多个服务器来提高网站、应用、数据库或其他服务的性能和可靠性。

2、compose安装

运行此命令以下载Docker Compose的当前稳定版本：

```
curl -L
"https://github.com/docker/compose/releases/download/1.24.
0/docker-compose-$(uname -s)-$(uname -m)" -o
/usr/local/bin/docker-compose
```

对二进制文件应用可执行权限：

```
chmod +x /usr/local/bin/docker-compose
```

测试安装：

```
docker-compose --version
```

3、创建目录

```
[root@zhx ~]# cd /tmp/
[root@zhx tmp]# mkdir docker
[root@zhx tmp]# ll
total 28
srwxr-xr-x 1 root root    0 May  9 00:51 Aegis-
<Guid(5A2C30A2-A87D-490A-9281-6765EDAD7CBA)>
```

```
drwxr-xr-x 2 root root 4096 May 14 17:33 docker
drwx------ 8 root root 4096 May 10 10:24 _MEIe2oKI8
drwx------ 8 root root 4096 May  9 17:44 _MEIkbzqqM
drwx------ 8 root root 4096 May 10 10:19 _MEIOfvith
drwx------ 8 root root 4096 May  9 17:10 _MEIW5iTOP
drwx------ 8 root root 4096 May  9 17:13 _MEIxLXoze
drwx------ 3 root root 4096 Apr 23 17:47 systemd-private-
4838273398ba40e3bf9191803ac370f4-ntpd.service-GYWE57
[root@zhx tmp]# cd docker/
[root@zhx docker]# mkdir compose
[root@zhx docker]# ll
```

4、编写compose文件

```
web1:                                                   #容器名称
        image: nginx                                    #镜像名称
        expose:                                         #对外暴露
端口
                - 80
        volumes:                                        #挂载卷
                - ./web1:/usr/share/nginx/html          #将当前目
录下的web1挂载到容器的/usr/share/nginx/html 目录下
web2:
        image: nginx
        expose:
                - 80
        volumes:
                - ./web2:/usr/share/nginx/html

haproxy:
        image: haproxy
        volumes:
                -
./haproxy/haproxy.cfg:/usr/local/etc/haproxy/haproxy.cfg:r
o    #只读挂载
        links:                          #容器链接
                - web1
                - web2
        ports:                          #端口映射
                - "80:80"
        expose:
                - "80"
```

5、编写发布文件

```
[root@zhx compose]# mkdir web1
[root@zhx compose]# mkdir web2
[root@zhx compose]# echo web1 > web1/index.html
[root@zhx compose]# echo web2 > web2/index.html
```

6、**编写haproxy文件**

haproy：提供负载均衡

```
[root@zhx compose]# mkdir haproxy
[root@zhx compose]# cd haproxy/
[root@zhx haproxy]# pwd
/tmp/docker/compose/haproxy
[root@zhx haproxy]# ll
[root@zhx haproxy]# vim haproxy.cfg
#######################
global
        log 47.102.153.168 local0
        log 47.102.153.168 local1 notice

defaults
        log global
        mode http
        option httplog
        option dontlognull
        timeout connect 5000ms
        timeout client 50000ms
        timeout server 50000ms
        stats uri /status

frontend balancer
        bind 0.0.0.0:80
        default_backend web_backends

backend web_backends
        balance roundrobin              #轮询算法；check表示
健康检查
        server server1 web1:80 check
        server server2 web2:80 check
```

查看：

```
[root@zhx haproxy]# ls
haproxy.cfg
[root@zhx haproxy]# cd ..
[root@zhx compose]# ls
docker-compose.yml  haproxy  web1  web2
```

7、拉取并查看镜像

```
[root@zhx ~]# docker pull nginx

[root@zhx ~]# docker pull haproxy
```

```
[root@zhx ~]# docker images
REPOSITORY          TAG                 IMAGE ID
CREATED             SIZE
nginx               latest              881bd08c0b08
2 weeks ago         109MB
haproxy             latest              fbd1f55f79b3
3 years ago         139MB
```

8、启动compose

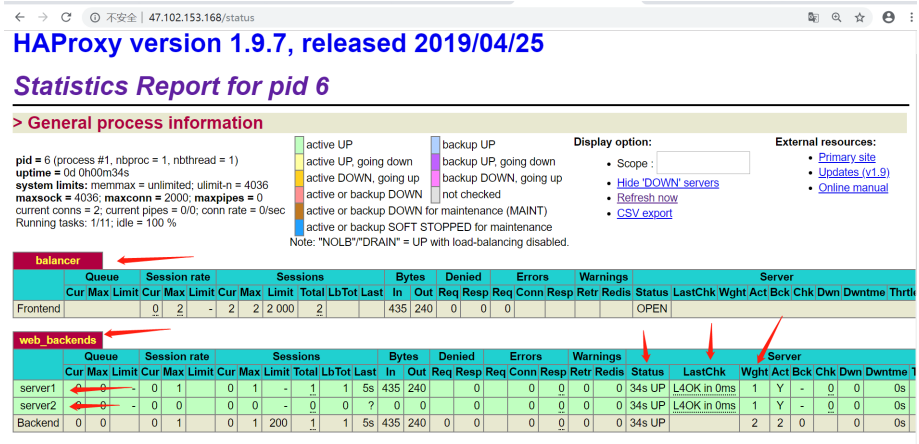
```
#启动；注意必须在此路径下才能执行
[root@zhx ~]# cd /tmp/docker/compose/
[root@zhx compose]# docker-compose up -d
```

```
[root@zhx compose]# docker-compose up -d
Creating compose_web2_1 ...
Creating compose_web1_1 ...
Creating compose_web2_1
Creating compose_web1_1 ... done
Creating compose_haproxy_1 ...
Creating compose_haproxy_1 ... done
```

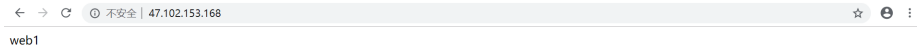
```
#查看日志
[root@zhx compose]# docker-compose logs
Attaching to compose_haproxy_1, compose_web1_1,
compose_web2_1
haproxy_1  | <7>haproxy-systemd-wrapper: executing
/usr/local/sbin/haproxy -p /run/haproxy.pid -f
/usr/local/etc/haproxy/haproxy.cfg -Ds
```

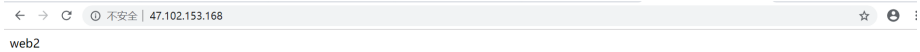
测试：

```
输入：  http://47.102.153.168/status   发现可以实现健康检查
```



输入：http://47.102.153.168/　刷新网页，发现可以实现轮询





9、管理compose：

```
#必须先关闭才能删除
[root@zhx haproxy]# docker-compose stop
[root@zhx haproxy]# docker-compose rm
```

```
[root@zhx compose]# docker-compose stop
Stopping compose_haproxy_1 ... done
Stopping compose_web2_1    ... done
Stopping compose_web1_1    ... done
[root@zhx compose]# docker-compose rm
Going to remove compose_haproxy_1, compose_web2_1, compose_web1_1
Are you sure? [yN] y
Removing compose_haproxy_1 ... done
Removing compose_web2_1    ... done
Removing compose_web1_1    ... done
```

```
#下次想再使用，只需再开启即可
[root@zhx haproxy]# docker-compose up -d
```

```
[root@zhx compose]# docker-compose up -d
Creating compose_web2_1 ...
Creating compose_web1_1 ...
Creating compose_web2_1
Creating compose_web1_1 ... done
Creating compose_haproxy_1 ...
Creating compose_haproxy_1 ... done
```