反向代理

单台代理

目的：

1。在浏览器访问一个地址：www.cpf.com。

2。Nginx接受上面的请求。

3。转发请求到tomcat。

4。tomcat响应一个页面，页面中有："tomcat hello !!!"。

步骤：

1。安装nginx，并启动。

```
[root@localhost sbin]# ./nginx -s quit
[root@localhost sbin]# ps -ef | grep nginx
root     1558  1203  0 07:36 pts/1    00:00:00 grep --color=auto nginx
[root@localhost sbin]# pwd
/usr/sbin
[root@localhost sbin]# ./nginx
[root@localhost sbin]# ps -ef | grep nginx
root     1560     1  0 07:36 ?        00:00:00 nginx: master process ./nginx
nginx    1561  1560  0 07:36 ?        00:00:00 nginx: worker process
root     1563  1203  0 07:36 pts/1    00:00:00 grep --color=auto nginx
[root@localhost sbin]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.16  netmask 255.255.255.0  broadcast 10.0.2.255
        inet6 fe80::f112:dfa5:cc29:debb  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:b7:f7:c4  txqueuelen 1000  (Ethernet)
        RX packets 667  bytes 58958 (57.5 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 590  bytes 123122 (120.2 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1  (Local Loopback)
        RX packets 68  bytes 5896 (5.7 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 68  bytes 5896 (5.7 KiB)
```

```
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

```
[root@localhost sbin]#
```

浏览器访问：http://localhost:1080/。得到：

Welcome to nginx!

2。准备一个tomcat。

查看服务器上是否有tomcat？

```
[root@localhost sbin]# systemctl status tomcat
Unit tomcat.service could not be found.
[root@localhost sbin]#
```

结论：没有tomcat。

安装tomcat。

```
[root@localhost sbin]# yum install -y tomcat
```

查看服务器上tomcat

```
[root@localhost sbin]# systemctl status tomcat
?.tomcat.service - Apache Tomcat Web Application Container
   Loaded: loaded (/usr/lib/systemd/system/tomcat.service; disabled; vendor preset: disabled)
   Active: inactive (dead)
[root@localhost sbin]#
```

查看tomcat安装目录：

```
[root@localhost sbin]# cd /usr/share/tomcat/
[root@localhost tomcat]# ll
total 0
drwxr-xr-x. 2 root root   76 Apr  7 07:40 bin
lrwxrwxrwx. 1 root tomcat 11 Apr  7 07:40 conf -> /etc/tomcat
lrwxrwxrwx. 1 root tomcat 22 Apr  7 07:40 lib -> /usr/share/java/tomcat
lrwxrwxrwx. 1 root tomcat 15 Apr  7 07:40 logs -> /var/log/tomcat
lrwxrwxrwx. 1 root tomcat 22 Apr  7 07:40 temp -> /var/cache/tomcat/temp
lrwxrwxrwx. 1 root tomcat 23 Apr  7 07:40 webapps -> /var/lib/tomcat/webapps
lrwxrwxrwx. 1 root tomcat 22 Apr  7 07:40 work -> /var/cache/tomcat/work
```

创建页面：

```
[root@localhost tomcat]# cd webapps/
[root@localhost webapps]# ll
total 0
[root@localhost webapps]# mkdir ROOT
[root@localhost webapps]# ll
total 0
drwxr-xr-x. 2 root root 6 Apr  7 07:41 ROOT
[root@localhost webapps]#
[root@localhost ROOT]# vi index.html
[root@localhost ROOT]# cat index.html
tomcat hello !!!
[root@localhost ROOT]#
```

启动tomcat

```
# 查看tomcat状态
[root@localhost ROOT]# systemctl status tomcat
?.tomcat.service - Apache Tomcat Web Application Container
   Loaded: loaded (/usr/lib/systemd/system/tomcat.service; disabled; vendor preset: disabled)
   Active: inactive (dead)
# 启动tomcat
[root@localhost ROOT]# systemctl start tomcat

# 查看tomcat状态
[root@localhost ROOT]# systemctl status tomcat
?.tomcat.service - Apache Tomcat Web Application Container
   Loaded: loaded (/usr/lib/systemd/system/tomcat.service; disabled; vendor preset: disabled)
   Active: active (running) since Thu 2022-04-07 07:44:02 EDT; 1s ago
 Main PID: 1755 (java)
   CGroup: /system.slice/tomcat.service
       ?..1755 /usr/lib/jvm/jre/bin/java -Djavax.sql.DataSource.Factory=org.apache.commons.dbcp.BasicData

Apr 07 07:44:04 localhost.localdomain server[1755]: Apr 07, 2022 7:44:04 AM org.apache.catalina.startup.Ver:
Apr 07 07:44:04 localhost.localdomain server[1755]: INFO: Command line argument: -Djava.endorsed.dirs=
Apr 07 07:44:04 localhost.localdomain server[1755]: Apr 07, 2022 7:44:04 AM org.apache.catalina.startup.Ver:
Apr 07 07:44:04 localhost.localdomain server[1755]: INFO: Command line argument: -Djava.io.tmpdir=/var/ca
Apr 07 07:44:04 localhost.localdomain server[1755]: Apr 07, 2022 7:44:04 AM org.apache.catalina.startup.Ver:
Apr 07 07:44:04 localhost.localdomain server[1755]: INFO: Command line argument: -Djava.util.logging.confi
Apr 07 07:44:04 localhost.localdomain server[1755]: Apr 07, 2022 7:44:04 AM org.apache.catalina.startup.Ver:
Apr 07 07:44:04 localhost.localdomain server[1755]: INFO: Command line argument: -Djava.util.logging.mana
Apr 07 07:44:04 localhost.localdomain server[1755]: Apr 07, 2022 7:44:04 AM org.apache.catalina.core.AprLife
Apr 07 07:44:04 localhost.localdomain server[1755]: INFO: The APR based Apache Tomcat Native library whic
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost ROOT]#
```

在tomcat的服务器上测试：

```
[root@localhost logs]# curl localhost:8080/index.html
tomcat hello !!!
[root@localhost logs]#
```

在 宿主机 浏览器测试：访问：http://localhost:2080/

结果：tomcat hello !!!

重点来了：

1。在浏览器访问一个地址：www.cpf.com。

2。Nginx接受上面的请求。

3。转发请求到tomcat。

4。tomcat响应一个页面，页面中有："tomcat hello !!!"。

通过nat网络分发：将本机2080转到虚拟机上的 nginx（80）。

转发：修改nginx配置文件：

```
14 http {
15    include      /etc/nginx/mime.types;
16    default_type  application/octet-stream;
17
18    log_format  main  '$remote_addr - $remote_user [$time_local] "$request" '
19                '$status $body_bytes_sent "$http_referer" '
20                '"$http_user_agent" "$http_x_forwarded_for"';
21
22    access_log  /var/log/nginx/access.log  main;
23
24    sendfile      on;
25    #tcp_nopush    on;
26
27    keepalive_timeout  65;
28
29    #gzip  on;
30
31    include /etc/nginx/conf.d/*.conf;
32
33    server{
34      listen 80;
```

```
35        server_name www.cpf.com;
36        location / {
37              proxy_pass http://localhost:8080;
38        }
39    }
40 }
```

重新加载配置文件：

```
[root@localhost sbin]# ./nginx -s reload
```

多台代理

目的：

1。浏览器访问：（http://www.cpf.com/beijing），通过nginx，跳转到一个tomcat上（http://localhost:8081），在浏览器上显示：beijing。

2。浏览器访问：（http://www.cpf.com/shanghai），通过nginx，跳转到一个tomcat上（http://localhost:8082），在浏览器上显示：shanghai。

准备两个tomcat：

访问官网：https://tomcat.apache.org/

在服务器上，根目录下，创建目录：

```
[root@localhost /]# mkdir tomcat
```

安装上传工具：

```
[root@localhost tomcat]# yum install lrzsz
```

上传tomcat文件

```
[root@localhost tomcat]# rz
```

创建两个tomcat目录：

```
[root@localhost tomcat]# mkdir tomcat8081
[root@localhost tomcat]# mkdir tomcat8082
[root@localhost tomcat]# ll
total 10332
-rw-r--r--. 1 root root 10577344 Apr  7 04:04 apache-tomcat-8.5.78.tar.gz
```

```
drwxr-xr-x. 2 root root        6 Apr  7 08:17 tomcat8081
drwxr-xr-x. 2 root root        6 Apr  7 08:17 tomcat8082
[root@localhost tomcat]#
```

解压tomcat到上面两个目录中：tomcat8081和tomcat8082。分别需要解压。

```
[root@localhost tomcat8081]# tar -xvf ../apache-tomcat-8.5.78.tar.gz
```

停止原来的tomcat

```
[root@localhost tomcat8082]# systemctl stop tomcat
```

分别修改每个tomcat（tomcat8081和tomcat8082）的配置文件：

```
修改点：
<Server port="8025" shutdown="SHUTDOWN">

修改点：
    <Connector port="8082" protocol="HTTP/1.1"
           connectionTimeout="20000"
           redirectPort="8443" />
```

分别启动两个tomcat（tomcat8081和tomcat8082）

```
[root@localhost bin]# pwd
/tomcat/tomcat8082/apache-tomcat-8.5.78/bin
[root@localhost bin]# ./startup.sh
```

分别在两个tomcat下，的 index.html 中 修改 beijing和shanghai，

```
[root@localhost ROOT]# cd /tomcat/tomcat8081/apache-tomcat-8.5.78/webapps/ROOT/
[root@localhost ROOT]# vi index.html
[root@localhost ROOT]# curl localhost:8081
beijing
[root@localhost ROOT]# curl localhost:8082
shanghai
[root@localhost ROOT]# cat index.html
beijing
[root@localhost ROOT]#
```

Nginx配置

修改nginx.conf配置：

```
server {
    listen 9001;
    server_name www.cpf.com;
    location ~ /beijing/ {
        proxy_pass http://localhost:8081
    }
    location ~ /shanghai/ {
        proxy_pass http://localhost:8082
    }
}
```

目的：

1。浏览器访问：（http://www.cpf.com/beijing），通过nginx，跳转到一个tomcat上（http://localhost:8081），在浏览器上显示：beijing。

2。浏览器访问：（http://www.cpf.com/shanghai），通过nginx，跳转到一个tomcat上（http://localhost:8082），在浏览器上显示：shanghai。

修改一下2个tomcat：

```
北京：
[root@localhost webapps]# cp ROOT/index.html beijing/
[root@localhost webapps]# ll
total 4
drwxr-xr-x.  2 root root   24 Apr  7 08:56 beijing
drwxr-x---. 15 root root 4096 Apr  7 08:17 docs
drwxr-x---.  7 root root   99 Apr  7 08:17 examples
drwxr-x---.  6 root root   79 Apr  7 08:17 host-manager
drwxr-x---.  6 root root  114 Apr  7 08:17 manager
drwxr-x---.  3 root root  241 Apr  7 08:25 ROOT
[root@localhost webapps]# cd beijing/
[root@localhost beijing]# ll
total 4
-rw-r--r--. 1 root root 8 Apr  7 08:56 index.html
[root@localhost beijing]# curl localhost:8081/beijing
[root@localhost beijing]# curl localhost:8081/beijing/index.html
beijing
[root@localhost beijing]#

上海：
[root@localhost webapps]# mkdir shanghai
[root@localhost webapps]# cp ROOT/index.html shanghai/
[root@localhost webapps]# cd shanghai/
[root@localhost shanghai]# ll
```

```
total 4
-rw-r--r--. 1 root root 9 Apr  7 08:57 index.html
[root@localhost shanghai]# cat index.html
shanghai
[root@localhost shanghai]# curl localhost:8082/shanghai/index.html
shanghai
[root@localhost shanghai]#
```

配置好网络映射（NAT）

beijing

http://www.cpf.com/beijing/index.html

http://www.cpf.com/shanghai/index.html