# nginx+keepalived高可用环境搭建

## nginx安装配置

### 一、环境准备

1. 智慧教育10-122.112.138.121 CentOS Linux release 7.7.1908 (Core)
2. 智慧教育11-122.112.136.127 CentOS Linux release 7.7.1908 (Core)
3. VIP 192.168.0.188

### 二、源码安装

1. 官网：http://nginx.org/
2. 安装包下载：wget http://nginx.org/download/nginx-1.16.1.tar.gz
3. 解压：tar -zxvf nginx-1.16.1.tar.gz -C /usr/local/src
4. 安装软件依赖：yum -y install pcre pcre-devel zlib zlib-devel openssl openssl-devel
5. 安装nginx

* cd /usr/local/src/ nginx-1.16.1  
  ./configuration –prefix=/usr/local  
  make && make install

### 三、nginx.conf配置

user root;  
worker\_processes 4;  
  
#error\_log logs/error.log;  
#error\_log logs/error.log notice;  
#error\_log logs/error.log info;  
  
#pid logs/nginx.pid;  
  
  
events {  
 worker\_connections 1024;  
}  
  
  
http {  
 include mime.types;  
 default\_type application/octet-stream;  
  
 #log\_format main '$remote\_addr - $remote\_user [$time\_local] "$request" '  
 # '$status $body\_bytes\_sent "$http\_referer" '  
 # '"$http\_user\_agent" "$http\_x\_forwarded\_for"';  
  
 #access\_log logs/access.log main;  
  
 sendfile on;  
 #tcp\_nopush on;  
  
 #keepalive\_timeout 0;  
 keepalive\_timeout 65;  
  
 #gzip on;  
  
  
 # 乐学卡  
 #服务器的集群   
 upstream lxk\_tomcat { #服务器集群名字  
 ip\_hash;  
 server 192.168.0.52:8080 weight=1; #服务器配置 weight是权重的意思，权重越大，分配的概率越大。  
 server 192.168.0.103:8080 weight=1; #服务器配置 weight是权重的意思，权重越大，分配的概率越大。  
 }  
  
 upstream thermometry-tomcat { #服务器集群名字  
 ip\_hash;  
 server 192.168.0.52:8081 weight=1; #服务器配置 weight是权重的意思，权重越大，分配的概率越大。  
 server 192.168.0.103:8081 weight=1; #服务器配置 weight是权重的意思，权重越大，分配的概率越大。  
 }  
  
 server {  
 listen 8901;  
 server\_name localhost; # 指定域名  
  
 location / {  
 proxy\_pass http://lxk\_tomcat;  
 #proxy\_pass http://thermometry-tomcat;  
 proxy\_redirect default;  
 # 处理静态文件加载问题  
 proxy\_set\_header Host $http\_host;  
 proxy\_set\_header X-Forward-For $remote\_addr;  
 }  
  
 location ~ /uploadFiles/.\*\.(gif|jpg|jpeg|png|bmp|ico|js|css|ttf|woff|scss|woff2|pdf|swf|htm|apk|mp4|avi|mp3|flv|html)$ {  
 root "/data/installpath/lxk\_resources";  
 index index.html index.htm;  
 }  
  
 location ~ /videoimg/.\*\.(gif|jpg|jpeg|png|bmp|ico|js|css|ttf|woff|scss|woff2|pdf|swf|htm|apk|mp4|avi|mp3|flv)$ {  
 root "/data/installpath/lxk\_resources";  
 index index.html index.htm;  
 }  
 }  
  
 #server {  
 # listen 80;  
 # server\_name localhost;  
  
 # #charset koi8-r;  
  
 # #access\_log logs/host.access.log main;  
  
 # location / {  
 # root html;  
 # index index.html index.htm;  
 # }  
  
 # #error\_page 404 /404.html;  
  
 # # redirect server error pages to the static page /50x.html  
 # #  
 # error\_page 500 502 503 504 /50x.html;  
 # location = /50x.html {  
 # root html;  
 # }  
  
 # # proxy the PHP scripts to Apache listening on 127.0.0.1:80  
 # #  
 # #location ~ \.php$ {  
 # # proxy\_pass http://127.0.0.1;  
 # #}  
  
 # # pass the PHP scripts to FastCGI server listening on 127.0.0.1:9000  
 # #  
 # #location ~ \.php$ {  
 # # root html;  
 # # fastcgi\_pass 127.0.0.1:9000;  
 # # fastcgi\_index index.php;  
 # # fastcgi\_param SCRIPT\_FILENAME /scripts$fastcgi\_script\_name;  
 # # include fastcgi\_params;  
 # #}  
  
 # # deny access to .htaccess files, if Apache's document root  
 # # concurs with nginx's one  
 # #  
 # #location ~ /\.ht {  
 # # deny all;  
 # #}  
 #}  
  
  
 # another virtual host using mix of IP-, name-, and port-based configuration  
 #  
 #server {  
 # listen 8000;  
 # listen somename:8080;  
 # server\_name somename alias another.alias;  
  
 # location / {  
 # root html;  
 # index index.html index.htm;  
 # }  
 #}  
  
  
 # HTTPS server  
 #  
 #server {  
 # listen 443 ssl;  
 # server\_name localhost;  
  
 # ssl\_certificate cert.pem;  
 # ssl\_certificate\_key cert.key;  
  
 # ssl\_session\_cache shared:SSL:1m;  
 # ssl\_session\_timeout 5m;  
  
 # ssl\_ciphers HIGH:!aNULL:!MD5;  
 # ssl\_prefer\_server\_ciphers on;  
  
 # location / {  
 # root html;  
 # index index.html index.htm;  
 # }  
 #}  
  
}

## keepalived安装配置

### 一、环境准备

与 nignx 环境配置一致

### 二、源码安装

1. 官网：http://www.keepalived.org/
2. 安装包下载：wget http://www.keepalived.org/software/keepalived-1.4.3.tar.gz
3. 解压：tar -zxvf keepalived-1.4.3.tar.gz -C /usr/local/src
4. 安装依赖：yum install -y openssl openssl-devel
5. 编译安装

cd /usr/local/src/keepalived-1.4.3  
 ./configure –prefix=/usr/local/keepalived  
 make && make install

### 三、配置keepalived服务

cp /usr/local/keepalived-1.4.3/keepalived/etc/init.d/keepalived /etc/init.d/  
cp /usr/local/keepalived-1.4.3/keepalived/etc/sysconfig/keepalived /etc/sysconfig/  
mkdir /etc/keepalived  
cp /usr/local/keepalived/etc/keepalived/keepalived.conf /etc/keepalived/

* 开机启动：systemctl enable keepalived.service
* 启动：systemctl start keepalived.service
* 停止：systemctl stop keepalived.service
* 状态：systemctl status keepalived.service

### 四、keepalived配置

! Configuration File for keepalived  
global\_defs {  
 router\_id longxuekaha1  
 vrrp\_skip\_check\_adv\_addr  
 #vrrp\_strict  
 vrrp\_garp\_interval 0  
 vrrp\_gna\_interval 0  
}  
  
vrrp\_script chk\_nginx {  
 script "/etc/keepalived/check\_nginx.sh"  
 interval 3  
 weight -2  
 fall 3  
 rise 2  
}  
  
vrrp\_script chk\_lxk {  
 script "/etc/keepalived/check\_port.sh 8080"  
 interval 3  
 weight -2  
 fall 3  
 rise 2  
}  
  
vrrp\_script chk\_thermometry {  
 script "/etc/keepalived/check\_port.sh 8081"  
 interval 3  
 weight -2  
 fall 3  
 rise 2  
}  
vrrp\_instance VI\_1 {  
 state MASTER  
 interface eth0  
 virtual\_router\_id 99  
 priority 100  
 advert\_int 1  
 authentication {  
 auth\_type PASS  
 auth\_pass 1111  
 }  
 virtual\_ipaddress {  
 192.168.0.188/24  
 }  
 track\_script {  
 chk\_nginx  
 chk\_lxk   
 #chk\_thermometry   
 }  
 notify\_master "/usr/bin/python /etc/keepalived/keepalived\_notify.py master 192.168.0.52 192.168.0.188"  
 notify\_backup "/usr/bin/python /etc/keepalived/keepalived\_notify.py backup 192.168.0.103 192.168.0.188"  
}

### 五、keepalived\_notify.py

python script.py{脚本名} role{master|backup} ip{本keepalived服务器IP} vip{虚拟IP}

#!/usr/bin/env python  
# -\*- coding:utf-8 -\*-  
  
import smtplib  
from email.mime.text import MIMEText  
from email.header import Header  
import sys, time, subprocess  
  
  
  
# 第三方 SMTP 服务  
mail\_host="smtp.163.com" #设置服务器  
#mail\_user="tiantsian" #用户名  
#mail\_pass="gongxifacai2" #口令  
mail\_user="lushuang0605" #用户名  
mail\_pass="XZWPYUWUJTVEZWQC" #口令  
  
  
sender = 'tiantsian@163.com' # 邮件发送者  
receivers = ['lushuang0605@163.com'] # 接收邮件，可设置为你的QQ邮箱或者其他邮箱  
  
p = subprocess.Popen('hostname', shell=True, stdin=subprocess.PIPE, stdout=subprocess.PIPE, stderr=subprocess.PIPE)  
hostname = p.stdout.readline().split('\n')[0]  
  
message\_to = ''  
for i in receivers:  
 message\_to += i + ';'  
  
def print\_help():  
 note = '''python script.py role ip vip  
 '''  
 print(note)  
 exit(1)  
  
time\_stamp = time.strftime('%Y-%m-%d %H:%M:%S',time.localtime(time.time()))  
  
if len(sys.argv) != 4:  
 print\_help()  
elif sys.argv[1] == 'master':  
 message\_content = '%s server: %s(%s) change to Master, VIP: %s' %(time\_stamp, sys.argv[2], hostname, sys.argv[3])  
 subject = '%s change to Master -- keepalived notify' %(sys.argv[2])  
elif sys.argv[1] == 'backup':  
 message\_content = '%s server: %s(%s) change to Backup, VIP: %s' %(time\_stamp, sys.argv[2], hostname, sys.argv[3])  
 subject = '%s change to Backup -- keepalived notify' %(sys.argv[2])  
else:  
 print\_help()  
  
message = MIMEText(message\_content, 'plain', 'utf-8')  
message['From'] = Header(sender, 'utf-8')  
message['To'] = Header(message\_to, 'utf-8')  
  
message['Subject'] = Header(subject, 'utf-8')  
  
try:  
 smtpObj = smtplib.SMTP()  
 smtpObj.connect(mail\_host, 25) # 25 为 SMTP 端口号  
 smtpObj.login(mail\_user,mail\_pass)  
 smtpObj.sendmail(sender, receivers, message.as\_string())  
 print("邮件发送成功")  
except smtplib.SMTPException as e:  
 print("Error: 无法发送邮件")  
 print(e)

### 六、check\_nginx.sh脚本

#!/bin/bash  
A=`ps -C nginx --no-header | wc -l`  
if [ $A -eq 0 ];then  
 #/data/installpath/nginx #尝试重新启动nginx  
 sleep 2 #睡眠2秒  
 if [ `ps -C nginx --no-header | wc -l` -eq 0 ];then  
 killall keepalived #启动失败，将keepalived服务杀死。将vip漂移到其它备份节点  
 fi  
fi

### 七、check\_port.sh脚本

#!/bin/bash  
#keepalived 监控端口脚本  
#使用方法：  
#在keepalived的配置文件中  
#vrrp\_script check\_port {#创建一个vrrp\_script脚本,检查配置  
# script "/etc/keepalived/check\_port.sh 6379" #配置监听的端口  
# interval 2 #检查脚本的频率,单位（秒）  
#}  
CHK\_PORT=$1  
echo $CHK\_PORT  
if [ "$CHK\_PORT" != "" ];then  
  
 PORT\_PROCESS=`lsof -i:$CHK\_PORT|wc -l`  
 if [ $PORT\_PROCESS -eq 0 ];then  
 echo "Port $CHK\_PORT Is Not Used,End."  
  
 sleep 2  
 PORT\_PROCESS=`lsof -i:$CHK\_PORT|wc -l`  
 if [ $PORT\_PROCESS -eq 0 ];then  
 /etc/init.d/keepalived stop  
 fi  
 fi  
else  
 echo "Check Port Cant Be Empty!"  
fi

###