lvs+keepalived实验详解

实验环境：rhel7.3虚拟机4台，关闭防火墙，SELinux，搭建好yum

架构部署：web1🡪192.168.4.1

web2🡪192.168.4.2

lvs1🡪192.168.4.10

lvs2🡪192.168.4.20

vip🡪192.168.4.100

#部署网络

[root@web1 ~]# ifconfig eth0 | head -2

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

inet 192.168.4.1 netmask 255.255.255.0 broadcast 192.168.4.255

[root@web1 ~]# cd /etc/sysconfig/network-scripts/

[root@web1 network-scripts]# cp ifcfg-lo ifcfg-lo:0

[root@web1 network-scripts]# vim ifcfg-lo:0

[root@web1 network-scripts]# cat ifcfg-lo:0

DEVICE=lo:0

IPADDR=192.168.4.100

NETMASK=255.255.255.255

ONBOOT=yes

BOOTPROTO=static

NETWORK=192.168.4.100

[root@web1 network-scripts]# vim /etc/sysctl.conf

[root@web1 network-scripts]# tail -4 /etc/sysctl.conf

net.ipv4.conf.all.arp\_ignore = 1

net.ipv4.conf.lo.arp\_ignore = 1

net.ipv4.conf.lo.arp\_announce = 2

net.ipv4.conf.all.arp\_announce = 2

[root@web1 network-scripts]# sysctl -p

net.ipv4.conf.all.arp\_ignore = 1

net.ipv4.conf.lo.arp\_ignore = 1

net.ipv4.conf.lo.arp\_announce = 2

net.ipv4.conf.all.arp\_announce = 2

[root@web1 network-scripts]# systemctl restart NetworkManager

[root@web1 network-scripts]# ifconfig lo:0

lo:0: flags=73<UP,LOOPBACK,RUNNING> mtu 65536

inet 192.168.4.100 netmask 255.255.255.255

loop txqueuelen 1 (Local Loopback)

[root@web2 ~]# ifconfig eth0 | head -2

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu

inet 192.168.4.2 netmask 255.255.255.0 broad

[root@web2 ~]# cd /etc/sysconfig/network-scripts/

[root@web2 network-scripts]# cp ifcfg-lo ifcfg-lo:0

[root@web2 network-scripts]# vim ifcfg-lo:0

[root@web2 network-scripts]# vim /etc/sysctl.conf

[root@web2 network-scripts]# sysctl -p

net.ipv4.conf.all.arp\_ignore = 1

net.ipv4.conf.all.arp\_announce = 2

net.ipv4.conf.lo.arp\_ignore = 1

net.ipv4.conf.lo.arp\_announce = 2

[root@web2 network-scripts]# tail -4 /etc/sysctl.conf

net.ipv4.conf.all.arp\_ignore = 1

net.ipv4.conf.all.arp\_announce = 2

net.ipv4.conf.lo.arp\_ignore = 1

net.ipv4.conf.lo.arp\_announce = 2

[root@web2 network-scripts]# cat ifcfg-lo\:0

DEVICE=lo:0

IPADDR=192.168.4.100

NETMASK=255.255.255.255

NETWORK=192.168.4.100

ONBOOT=yes

BOOTPROTO=static

[root@web2 network-scripts]# systemctl restart NetworkManager

#安装httpd

[root@web1 ~]# yum -y install httpd

[root@web1 ~]# echo web1 > /var/www/html/index.html

[root@web1 ~]# systemctl start httpd

[root@web1 ~]# systemctl enable httpd.service

Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.

[root@web1 ~]# curl http://192.168.4.1

web1

[root@web2 ~]# yum -y install httpd

[root@web2 ~]# systemctl start httpd.service

[root@web2 ~]# systemctl enable httpd.service

Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.

[root@web2 ~]# echo web2 > /var/www/html/index.html

[root@web2 ~]# curl http://192.168.4.2

web2

#部署lvs+keepalived

[root@lvs1 ~]# ifconfig eth0 | head -2

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

inet 192.168.4.10 netmask 255.255.255.0 broadcast 192.168.4.255

[root@lvs1 ~]# yum -y install keepalived

[root@lvs1 ~]# yum -y install ipvsadm

[root@lvs1 ~]# vim /etc/keepalived/keepalived.conf

[root@lvs1 ~]# cat /etc/keepalived/keepalived.conf

! Configuration File for keepalived

global\_defs {

notification\_email {

admin@tedu.cn

}

notification\_email\_from ka@tedu.cn

smtp\_server 127.0.0.1

smtp\_connect\_timeout 30

router\_id lvs1

}

vrrp\_instance VI\_1 {

state MASTER

interface eth0

virtual\_router\_id 51

priority 100

advert\_int 1

authentication {

auth\_type PASS

auth\_pass redhat

}

virtual\_ipaddress {

192.168.4.100

}

}

virtual\_server 192.168.4.100 80 {

delay\_loop 6

lb\_algo wrr

lb\_kind DR

nat\_mask 255.255.255.0

persistence\_timeout 50

protocol TCP

real\_server 192.168.4.1 80 {

weight 1

TCP\_CHECK {

connect\_timeout 3

nb\_get\_retry 3

delay\_before\_retry 3

}

}

real\_server 192.168.4.2 80 {

weight 2

TCP\_CHECK {

connect\_timeout 3

nb\_get\_retry 3

delay\_before\_retry 3

}

}

}

[root@lvs1 ~]# systemctl restart keepalived.service

[root@lvs1 ~]# ipvsadm -Ln

IP Virtual Server version 1.2.1 (size=4096)

Prot LocalAddress:Port Scheduler Flags

-> RemoteAddress:Port Forward Weight ActiveConn InActConn

TCP 192.168.4.100:80 wrr persistent 50

-> 192.168.4.1:80 Route 1 0 0

-> 192.168.4.2:80 Route 2 0 0

[root@lvs1 ~]# systemctl enable keepalived.service

Created symlink from /etc/systemd/system/multi-user.target.wants/keepalived.service to /usr/lib/systemd/system/keepalived.service.

[root@lvs2 ~]# ifconfig eth0 | head -2

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

inet 192.168.4.20 netmask 255.255.255.0 broadcast 192.168.4.255

[root@lvs2 ~]# yum -y install ipvsadm keepalived

[root@lvs2 ~]# vim /etc/keepalived/keepalived.conf

[root@lvs2 ~]# cat /etc/keepalived/keepalived.conf

! Configuration File for keepalived

global\_defs {

notification\_email {

admin@tedu.cn

}

notification\_email\_from ka@tedu.cn

smtp\_server 127.0.0.1

smtp\_connect\_timeout 30

router\_id lvs1

}

vrrp\_instance VI\_1 {

state SLAVE

interface eth0

virtual\_router\_id 51

priority 50

advert\_int 1

authentication {

auth\_type PASS

auth\_pass redhat

}

virtual\_ipaddress {

192.168.4.100

}

}

virtual\_server 192.168.4.100 80 {

delay\_loop 6

lb\_algo wrr

lb\_kind DR

nat\_mask 255.255.255.0

persistence\_timeout 50

protocol TCP

real\_server 192.168.4.1 80 {

weight 1

TCP\_CHECK {

connect\_timeout 3

nb\_get\_retry 3

delay\_before\_retry 3

}

}

real\_server 192.168.4.2 80 {

weight 2

TCP\_CHECK {

connect\_timeout 3

nb\_get\_retry 3

delay\_before\_retry 3

}

}

}

[root@lvs2 ~]# systemctl start keepalived.service

[root@lvs2 ~]# ipvsadm -Ln

IP Virtual Server version 1.2.1 (size=4096)

Prot LocalAddress:Port Scheduler Flags

-> RemoteAddress:Port Forward Weight ActiveConn InActConn

TCP 192.168.4.100:80 wrr persistent 50

-> 192.168.4.1:80 Route 1 0 0

-> 192.168.4.2:80 Route 2 0 0

[root@lvs2 ~]# systemctl enable keepalived.service

Created symlink from /etc/systemd/system/multi-user.target.wants/keepalived.service to /usr/lib/systemd/system/keepalived.service.

#测试结果

[root@lvs1 ~]# ip a s | grep 4.100

inet 192.168.4.100/32 scope global eth0

[root@lvs2 ~]# ip a s | grep 4.100

[root@lvs1 ~]# systemctl stop keepalived.service

[root@lvs1 ~]# ip a s | grep 4.100

[root@lvs2 ~]# ip a s | grep 4.100

inet 192.168.4.100/32 scope global eth0

[root@lvs1 ~]# systemctl start keepalived

[root@lvs1 ~]# ip a s | grep 4.100

inet 192.168.4.100/32 scope global eth0

[root@lvs2 ~]# ip a s | grep 4.100

[root@localhost ~]# curl http://192.168.4.100

web2

[root@web2 ~]# systemctl stop httpd

[root@localhost ~]# curl http://192.168.4.100

web1

[root@lvs1 ~]# ipvsadm -Ln --stats

IP Virtual Server version 1.2.1 (size=4096)

Prot LocalAddress:Port Conns InPkts OutPkts InBytes OutBytes

-> RemoteAddress:Port

TCP 192.168.4.100:80 22 132 0 8734 0

-> 192.168.4.1:80 15 90 0 5955 0

-> 192.168.4.2:80 7 42 0 2779 0