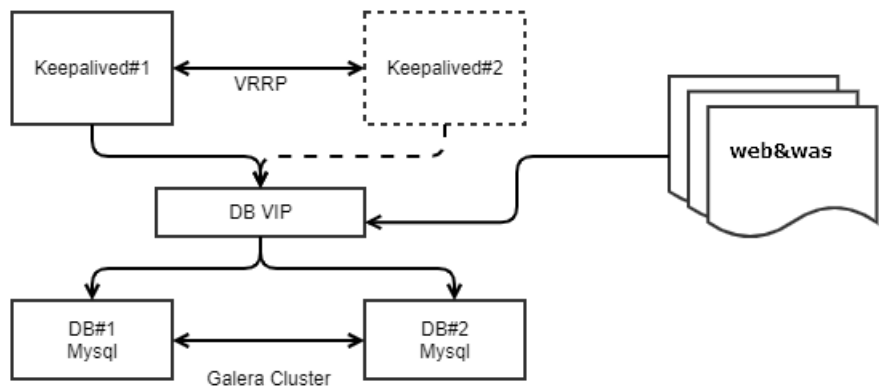


keepalived기반의 DB이중화 구현

시스템 구성도

1. 서버정보



2. 로드밸런싱 종류

알고리즘 종류	알고리즘 설명	설정 값
라운드 로빈	하나씩 분배	rr
가중치 라운드 로빈	가중치가 큰 서버로 분배	wrr
최소 연결	접속수가 적은 서버로 분배	lc
가중치 최소연결	(접속수+1)/가중치 로 최소값 서버로 분배	wlc
지역 최소연결	접속수가 가중치를 넘기기전까지 한서버만 분배	lbic
복제기반의 지역 최소연결	가중치를 넘고 있을때 접속수가 가장 적은 서버 선택 (기본작동은 lbic와 동일)	lbicr
목적지 해시	목적지 IP로 부터 해시값 계산해서 분배	dh
소스 해시	소스 IP로 부터 해시값 계산해서 분배	sh
응답속도	응답속도(Short Expected Delay)가 가장 짧은 서버로 분배 (실제로는 접속수가 가장 적은 서버로 분배)	sed
큐 없음	Active 접속수가 0인 서버를 우선 분배(기본작동은 sed알고리즘과 동일)	nq

시스템 설치(전체서버)

1. 패키지 설치

```
$> yum install keepalived ipvsadm -y
```

2. keepalived 설정

```
$> vi /etc/keepalived/keepalived.conf
global_defs {
    router_id MARIA_HA
    script_user root
}
```

```

vrrp_instance DB_HA {
    state BACKUP
    interface eth0
    virtual_router_id 10
    priority 100
    lvs_sync_daemon_interface eth0

    authentication {
        auth_type PASS
        auth_pass mariadb
    }

    virtual_ipaddress {
        172.21.115.207
    }
}

virtual_server 172.21.115.217 3306 {
    delay_loop 3
    lb_algo dh
    protocol TCP
    real_server 172.21.115.218 3306 {
        weight 100
        MISC_CHECK {
            misc_path "/svc/mysql_check.sh 172.21.115.218"
            misc_timeout 3
        }
    }
    real_server 172.21.115.215 3306 {
        weight 100
        MISC_CHECK {
            misc_path "/svc/mysql_check.sh 172.21.115.215"
            misc_timeout 3
        }
    }
}

```

3. 모니터 스크립트 설정

```

$> vi /svc/mysql_check.sh

#!/bin/bash

/svc/mysql/bin/mysql -u monitor -pmonitor -h $1 -Nse 'select now()'

$> chmod 755 /svc/mysql_check.sh

```

시스템 설치(DB#1서버)

1. 접근을 위한 db계정설정

```

MariaDB [(none)]> grant process on *.* to monitor@'172.21.115.215' identified by 'monitor' with grant option;
MariaDB [(none)]> grant process on *.* to monitor@'172.21.115.218' identified by 'monitor' with grant option;
MariaDB [(none)]> flush privileges;

```

2. 커널 파라미터 수정 후 적용

```

$> vi /etc/sysctl.conf
...
net.ipv4.ip_forward = 1
...
$> sysctl -p

```

3. 서비스 실행 후 VIP할당여부 확인

```
$> systemctl start keepalived
$> ip addr show | grep 32
    inet 172.21.115.217/32 scope global eth0  #실제로 Active된 노드에서만 VIP 할당됨
```

keepalived 운영

1. 모니터링 방법

```
$> ipvsadm -Ln

IP Virtual Server version 1.2.1 (size=4096)
Prot LocalAddress:Port Scheduler Flags
  -> RemoteAddress:Port      Forward Weight ActiveConn InActConn
TCP  172.21.115.217:3306 sh
  -> 172.21.115.215:3306      Masq    100    2      0
  -> 172.21.115.218:3306      Masq    100    50     0
```

2. 현재 연결된 세션 정보 확인

```
$> ipvsadm -Lnc
IPVS connection entries
pro expire state      source          virtual         destination
TCP 14:56 ESTABLISHED 172.21.114.22:52950 172.21.115.217:3306 172.21.115.218:3306
TCP 14:56 ESTABLISHED 172.21.114.22:52968 172.21.115.217:3306 172.21.115.218:3306
TCP 14:56 ESTABLISHED 172.21.114.22:52984 172.21.115.217:3306 172.21.115.218:3306
TCP 14:54 ESTABLISHED 172.21.114.22:52928 172.21.115.217:3306 172.21.115.218:3306
TCP 14:56 ESTABLISHED 172.21.114.22:52980 172.21.115.217:3306 172.21.115.218:3306
```

장애발생시 조치

1. 장애구현 (DB#1 Mariadb 접근 불가시)

```
# Keepalived에서 Mysql 접근 불가 확인

$> vi /var/log/messages
...
Mar 11 14:36:43 dbms01 Keepalived_healthcheckers[666145]: Misc check for [[172.21.115.218]:tcp:3306 VS [172.21.115.217]:tcp:3306] by
[/svc/mysql_check.sh] timed out with retry disabled.
Mar 11 14:36:43 dbms01 Keepalived_healthcheckers[666145]: Removing service [172.21.115.218]:tcp:3306 to VS [172.21.115.217]:tcp:3306
...
```

ipvsadm에서 장애발생서버 제외

```
$> ipvsadm
IP Virtual Server version 1.2.1 (size=4096)
Prot LocalAddress:Port Scheduler Flags
  -> RemoteAddress:Port      Forward Weight ActiveConn InActConn
TCP  172.21.115.217:3306 sh
  -> 172.21.115.215:3306      Masq    100    33     13
```

2. 장애구현 (DB#1 서버 장애시)

```
#master 서버
$> vi /var/log/messages
```

```
Mar 11 14:19:21 dbms01 systemd[1]: Stopping LVS and VRRP High Availability Monitor...
Mar 11 14:19:21 dbms01 Keepalived[664420]: Stopping
Mar 11 14:19:21 dbms01 Keepalived_healthcheckers[664421]: Shutting down service [172.21.115.218]:tcp:3306 from VS [172.21.115.217]:tcp:3306
Mar 11 14:19:21 dbms01 kernel: IPVS: stopping master sync thread 664516 ...
Mar 11 14:19:21 dbms01 Keepalived_vrrp[664422]: (DB_HA) sent 0 priority
Mar 11 14:19:21 dbms01 Keepalived_vrrp[664422]: (DB_HA) removing VIPs.
Mar 11 14:19:21 dbms01 Keepalived_healthcheckers[664421]: Shutting down service [172.21.115.215]:tcp:3306 from VS [172.21.115.217]:tcp:3306
Mar 11 14:19:21 dbms01 Keepalived_healthcheckers[664421]: Stopped - used 0.011017 user time, 0.141106 system time
Mar 11 14:19:22 dbms01 Keepalived_vrrp[664422]: Stopped - used 0.011218 user time, 0.026105 system time
Mar 11 14:19:22 dbms01 Keepalived[664420]: CPU usage (self/children) user: 0.000000/1.222181 system: 0.001086/1.218784
Mar 11 14:19:22 dbms01 Keepalived[664420]: Stopped Keepalived v2.1.5 (07/13,2020)
Mar 11 14:19:22 dbms01 systemd[1]: keepalived.service: Succeeded.
Mar 11 14:19:22 dbms01 systemd[1]: Stopped LVS and VRRP High Availability Monitor.
1
2
3
4
5
6
7
8

#Standby 서버
$> vi /var/log/messages
Mar 11 14:20:41 dbms02 Keepalived_vrrp[666146]: (DB_HA) Backup received priority 0 advertisement
Mar 11 14:20:42 dbms02 Keepalived_vrrp[666146]: (DB_HA) Receive advertisement timeout
Mar 11 14:20:42 dbms02 Keepalived_vrrp[666146]: (DB_HA) Entering MASTER STATE
Mar 11 14:20:42 dbms02 Keepalived_vrrp[666146]: (DB_HA) setting VIPs.
Mar 11 14:20:42 dbms02 Keepalived_vrrp[666146]: (DB_HA) Sending/queueing gratuitous ARPs on eth0 for 172.21.115.217
Mar 11 14:20:42 dbms02 Keepalived_vrrp[666146]: Sending gratuitous ARP on eth0 for 172.21.115.217
```

reference

- https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/7/html/load_balancer_administration/index//
- <https://www.slideshare.net/neoclova/maria-db-250919306//>

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