네트워크

GateWay 이중화

■ 게이트 이중화 로드밸런싱(GLBP)

- HSRP, VRRP 는 설정해 주어야 한다.
- HSRP에서 좀 더 확장된 프로토콜이다. => 시스코 전용, HSRP의 기본 설정도 같다.
- AVG(Active Virtual Gateway) : 전체 그룹(포더 : 데이터가 나가는 게이트웨이들)을 관리하는 게이트웨이 라우터
- AVF(Active Virtual Forwarder) : 게이트웨이 역할

[실습]

1. 라우터 설정

```
R1(config)#int f0/1
R1(config-if)#glbp 10 ip 100.100.100.1
R1(config-if)#
*Mar  1 00:19:04.047: %GLBP-6-STATECHANGE: FastEthernet0/1 Grp 10 state Standby -> Active
R1(config-if)#
*Mar  1 00:19:14.047: %GLBP-6-FWDSTATECHANGE: FastEthernet0/1 Grp 10 Fwd 1 state Listen -> Active

R2(config)#int f0/1
R2(config-if)#glbp 10 ip 100.100.100.1
R2(config-if)#
*Mar  1 00:19:48.611: %GLBP-6-FWDSTATECHANGE: FastEthernet0/1 Grp 10 Fwd 2 state Listen -> Active

R1#show glbp
FastEthernet0/1 - Group 10
  State is Active    //
    2 state changes, last state change 00:01:58
  Virtual IP address is 100.100.100.1    //
  Hello time 3 sec, hold time 10 sec    //
    Next hello sent in 1.588 secs
  Redirect time 600 sec, forwarder timeout 14400 sec
  Preemption disabled      //
  Active is local
  Standby is 100.100.100.40, priority 100 (expires in 8.680 sec)    //
  Priority 100 (default)    //
```

```
  Weighting 100 (default 100), thresholds: lower 1, upper 100      //가중치가 높으면 더 자주 mac을 할당해 준다.
  Load balancing: round-robin(돌아가면서 할당)
  Group members:
    c201.2640.0001 (100.100.100.30) local        //실제 MAC과 IP
    c202.0d94.0001 (100.100.100.40)
  There are 2 forwarders (1 active)      //소속되어 있는 라우터 수만큼 나온다.
  Forwarder 1
    State is Active
      1 state change, last state change 00:01:48
    MAC address is 0007.b400.0a01 (default)   //0007.b400 : glbp / 0a : 그룹 / 01 : 포더 ID
    Owner ID is c201.2640.0001
    Redirection enabled
    Preemption enabled, min delay 30 sec
    Active is local, weighting 100
  Forwarder 2
    State is Listen
    MAC address is 0007.b400.0a02 (learnt)
    Owner ID is c202.0d94.0001
    Redirection enabled, 595.580 sec remaining (maximum 600 sec)
    Time to live: 14395.580 sec (maximum 14400 sec)
    Preemption enabled, min delay 30 sec
    Active is 100.100.100.40 (primary), weighting 100 (expires in 5.576 sec)
R1#
```

2. PC설정

```
PC1> ip 100.100.100.11/24 100.100.100.1
Checking for duplicate address...
PC1 : 100.100.100.11 255.255.255.0 gateway 100.100.100.1

PC1> ping 172.16.10.1
84 bytes from 172.16.10.1 icmp_seq=1 ttl=254 time=44.963 ms
84 bytes from 172.16.10.1 icmp_seq=2 ttl=254 time=47.863 ms
84 bytes from 172.16.10.1 icmp_seq=3 ttl=254 time=46.260 ms
84 bytes from 172.16.10.1 icmp_seq=4 ttl=254 time=47.027 ms
84 bytes from 172.16.10.1 icmp_seq=5 ttl=254 time=50.963 ms
```

3. arp로 mac확인 => Forwarder 1의 mac이 확인

```
PC1> arp
```

00:07:b4:00:0a:01 100.100.100.1 expires in 5 seconds

4. R2 f0/1 sh
R2(config)#int f0/1
R2(config-if)#sh
R2(config-if)#
*Mar 1 00:46:14.679: %GLBP-6-FWDSTATECHANGE: FastEthernet0/1 Grp 10 Fwd 2 state Active -> Init
R2(config-if)#
*Mar 1 00:46:14.843: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 100: Neighbor 100.100.100.30 (FastEthernet0/1) is down: interface down
R2(config-if)#
*Mar 1 00:46:16.675: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
*Mar 1 00:46:17.675: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

R1#
*Mar 1 00:46:25.435: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 100: Neighbor 100.100.100.40 (FastEthernet0/1) is down: holding time expired
R1#show glbp b
Interface Grp Fwd Pri State Address Active router Standby router
Fa0/1 10 - 100 Active 100.100.100.1 local unknown
Fa0/1 10 1 - Active 0007.b400.0a01 local -
Fa0/1 10 2 - Active 0007.b400.0a02 local - //최대 4대까지 가능

5. R2 f0/1 no sh
R2(config-if)#no sh
R2(config-if)#
*Mar 1 00:47:55.375: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 100: Neighbor 100.100.100.30 (FastEthernet0/1) is up: new adjacency
R2(config-if)#
*Mar 1 00:47:56.035: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar 1 00:47:57.035: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R2(config-if)#
*Mar 1 00:48:26.959: %GLBP-6-FWDSTATECHANGE: FastEthernet0/1 Grp 10 Fwd 2 state Listen -> Active

6. avg변경(R1 -> R2)

R2(config-if)#glbp 10 priority 200
R2(config-if)#glbp 10 preempt //HSRP
R2(config-if)#
*Mar 1 00:49:31.875: %GLBP-6-STATECHANGE: FastEthernet0/1 Grp 10 state Standby -> Active

7. weighting
R2(config-if)#glbp 10 weighting 250 //최소 1, 최대 250
R2(config-if)#glbp 10 weighting 250 lower 90 upper 250 //(90 이하로 떨어지면 넘기고, 250까지 올라가면 넘겨받겠다.)
R2(config-if)#glbp 10 load-balancing ?
host-dependent Load balance equally, source MAC determines forwarder choice // 처음 할당 받은 mac을 유지(컴퓨터를 껐다 키면 리셋)
round-robin Load balance equally using each forwarder in turn //순서대로 주는 것
weighted Load balance in proportion to forwarder weighting //웨이트 값이 높은 것에 좀 더 자주 주는것
R2(config-if)#glbp 10 load-balancing weighted

8. 트랙
R2(config)#track 11 interface f0/0 line-protocol
R2(config)#int f0/1
R2(config-if)#glbp 10 weighting track 11 decrement 161
R2(config-if)#int f0/0
R2(config-if)#sh
R2(config-if)#
*Mar 1 01:01:17.723: %TRACKING-5-STATE: 11 interface Fa0/0 line-protocol Up->Down
*Mar 1 01:01:17.867: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 100: Neighbor 20.20.20.1 (FastEthernet0/0) is down: interface down
R2(config-if)#
*Mar 1 01:01:19.723: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Mar 1 01:01:20.723: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
R2(config-if)#
*Mar 1 01:01:49.987: %GLBP-6-FWDSTATECHANGE: FastEthernet0/1 Grp 10 Fwd 2 state Active -> Listen
R2#show glbp b
Interface Grp Fwd Pri State Address Active router Standby router
Fa0/1 10 - 200 Active 100.100.100.1 local 100.100.100.30
Fa0/1 10 1 - Listen 0007.b400.0a01 100.100.100.30 -

```
Fa0/1          10    2    -    Listen    0007.b400.0a02    100.100.100.30    -
```