

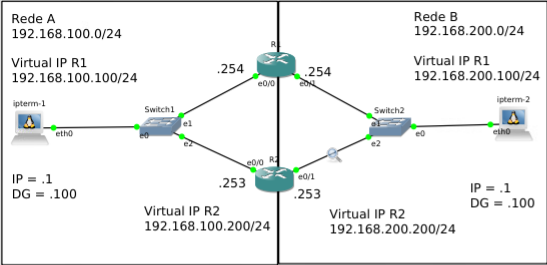
Teste 03

HSRP - Dois routers no mesmo grupo com IPs virtuais diferentes + autenticação (Topologia 1)

Ao configurar os dois routers do mesmo grupo HSRP com IPs virtuais diferentes, acontece que o último router a ser configurado, mantem-se em Standby Router, no entanto está sempre a mostrar no `output` que existe uma má configuração sendo que esta má configuração não permite a comunicação do IPterm-1 para o IPterm-2.

Na autenticação ocorre o mesmo problema, ou seja, se um router tiver autenticação ligada, o seu SR também tem de ter essa autenticação com a chave correta, caso contrário não é feita a comunicação.

HSRP - Dois routers no mesmo grupo com IPs virtuais diferentes + autenticação - Topologia 1



```
R2
/bin/bash 91x26

Preemption enabled, delay min 60 secs
Active router is 192.168.100.254, priority 105 (expires in 11.520 sec)
Standby router is local
Priority 105 (configured 105)
Group name is "hsrp-Et0/0-1" (default)
Ethernet0/1 - Group 1
State is Standby
 1 state change, last state change 00:00:15
Virtual IP address is 192.168.200.200
Active virtual MAC address is 0000.0c07.ac01
Local virtual MAC address is 0000.0c07.ac01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.200 secs
Preemption enabled, delay min 60 secs
Active router is 192.168.200.254, priority 105 (expires in 9.264 sec)

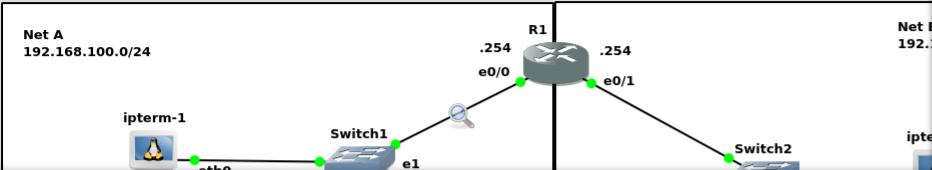
R2#
*Nov 10 15:41:14.358: %HSRP-4-DIFFVIP1: Ethernet0/1 Grp 1 active routers
192.168.200.100 is different to the locally configured address 192.168.
R2#
*Nov 10 15:41:46.713: %HSRP-4-DIFFVIP1: Ethernet0/0 Grp 1 active routers
192.168.100.100 is different to the locally configured address 192.168.
R2#
*Nov 10 15:42:17.075: %HSRP-4-DIFFVIP1: Ethernet0/1 Grp 1 active routers
192.168.200.100 is different to the locally configured address 192.168.
R2#
```

VRRP

Nos PCs configuramos exatamente igual ao HSRP, ou seja, colocamos o `DG` com o IP virtual definido no grupo

No R1 configuramos a interface `e0/0` para usar o mesmo IP de R1 (`vrrp 1 ip 192.168.100.254`) assim como autenticação em MD5 (`vrrp 1 authentication md5 key-string EsteEOMeuSegredo`)

Configuração VRRP - Topologia 2



```
R1(config-if)#
R1(config-if)#no vrrp 1 ip 192.168.100.2
R1(config-if)#no vrrp 1 ip 192.168.100.2
*Nov 10 16:56:04.975: %VRRP-6-STATECHANG
R1(config-if)#do sh vrrp
R1(config-if)#vrrp 1 ip 192.168.100.254
R1(config-if)#
*Nov 10 16:56:42.844: %VRRP-6-STATECHANG
R1(config-if)#
```

No.	Time	Source	Destination	Protocol	Length	Info
5	21.500622	IETF-VRRP-VRID_01	Broadcast	ARP	60	Gratuitous ARP for 192.168.100.254 (Reply)
6	21.500922	IETF-VRRP-VRID_01	STP-UplinkFast	ARP	60	Gratuitous ARP for 192.168.100.254 (Reply)
7	21.500978	192.168.100.254	224.0.0.18	VRRP	84	Announcement (v2)
8	22.400157	192.168.100.254	224.0.0.18	VRRP	84	Announcement (v2)
9	22.501049	IETF-VRRP-VRID_01	Broadcast	ARP	60	Gratuitous ARP for 192.168.100.254 (Reply)
10	22.501122	IETF-VRRP-VRID_01	STP-UplinkFast	ARP	60	Gratuitous ARP for 192.168.100.254 (Reply)
11	23.220034	192.168.100.254	224.0.0.18	VRRP	84	Announcement (v2)
13	23.511412	IETF-VRRP-VRID_01	Broadcast	ARP	60	Gratuitous ARP for 192.168.100.254 (Reply)
14	23.511537	IETF-VRRP-VRID_01	STP-UplinkFast	ARP	60	Gratuitous ARP for 192.168.100.254 (Reply)
15	24.220322	192.168.100.254	224.0.0.18	VRRP	84	Announcement (v2)
16	25.212040	192.168.100.254	224.0.0.18	VRRP	84	Announcement (v2)

Frame 15: 84 bytes on wire (672 bits), 84 bytes captured (672 bits) on interface -, id 0

Ethernet II, Src: IETF-VRRP-VRID_01 (00:00:5e:00:01:01), Dst: IPv4mcast_12 (01:00:5e:00:00:12)

Internet Protocol Version 4, Src: 192.168.100.254, Dst: 224.0.0.18

Virtual Router Redundancy Protocol

Version 2, Packet type 1 (Advertisement)

Virtual Rtr ID: 1

Priority: 255 (This VRRP router owns the virtual router's IP address(es))

Addr Count: 1

Auth Type: Cisco VRRP MD5 authentication (254)

Adver Int: 1

Checksum: 0xbccc [correct]

[Checksum Status: Good]

IP Address: 192.168.100.254

MD5 Authentication Data: 0xafd486b28fd3f882acbe045dbe937d8

Agora desativamos o VRRP e voltamos a fazer tudo de novo mas com os `object tracking` ativos e com o IP Virtual global, ou seja para a Rede A 192.168.100.100 para a rede B 192.168.200.100

Depois do R1 ficar a Master, apenas este emite tráfego de 1 em 1 segundo, ao contrário do HSRP que tanto o AR como o SR transmitiam tráfego de 3 em 3.

- No R1

```

conf t
track 1 interface e0/1 line-protocol
exit
track 2 interface e0/0 line-protocol
exit
int e0/0
vrrp 1 ip 192.168.100.100
vrrp 1 priority 105
vrrp 1 track 1
int e0/1
vrrp 1 ip 192.168.200.100
vrrp 1 priority 105
vrrp 1 track 2

```

- No R2

```

conf t
track 1 interface e0/1 line-protocol
exit
track 2 interface e0/0 line-protocol
exit
int e0/0
vrrp 1 ip 192.168.100.100
vrrp 1 priority 100
vrrp 1 track 1
int e0/1
vrrp 1 ip 192.168.200.100
vrrp 1 priority 100
vrrp 1 track 2

```

```

[OK]
R1(config-if)#do sh vrrp
Ethernet0/0 - Group 1
  State is Master
  Virtual IP address is 192.168.100.100
  Virtual MAC address is 0000.5e00.0101
  Advertisement interval is 1.000 sec
  Preemption enabled
  Priority is 105
    Track object 1 state Up decrement 10
  Master Router is 192.168.100.254 (local), priority is 105
  Master Advertisement interval is 1.000 sec
  Master Down interval is 3.589 sec

Ethernet0/1 - Group 1
  State is Master
  Virtual IP address is 192.168.200.100
  Virtual MAC address is 0000.5e00.0101
  Advertisement interval is 1.000 sec
  Preemption enabled
  Priority is 105
    Track object 2 state Up decrement 10
  Master Router is 192.168.200.254 (local), priority is 105
  Master Advertisement interval is 1.000 sec
  Master Down interval is 3.589 sec

R1(config-if)#

```

```

R2(config-if)#
R2(config-if)#do sh vrrp
Ethernet0/0 - Group 1
  State is Backup
  Virtual IP address is 192.168.100.100
  Virtual MAC address is 0000.5e00.0101
  Advertisement interval is 1.000 sec
  Preemption enabled
  Priority is 100
    Track object 1 state Up decrement 10
  Master Router is 192.168.100.254, priority is 105
  Master Advertisement interval is 1.000 sec
  Master Down interval is 3.609 sec (expires in 3.296 sec)

Ethernet0/1 - Group 1
  State is Backup
  Virtual IP address is 192.168.200.100
  Virtual MAC address is 0000.5e00.0101
  Advertisement interval is 1.000 sec
  Preemption enabled
  Priority is 100
    Track object 2 state Up decrement 10
  Master Router is 192.168.200.254, priority is 105
  Master Advertisement interval is 1.000 sec
  Master Down interval is 3.609 sec (expires in 2.954 sec)

R2(config-if)#

```

Injetar uma falha no R1 e0/0

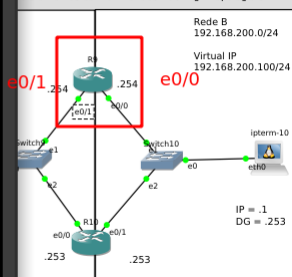
Depois de injetada a falha no R1 e0/0 e como temos o *tracking object*, o mesmo decrementa em 10 a sua prioridade (era 105 passou a 95) e então o que acontece é que o R2 passa a ser Master tanto na Rede A como na Rede B, tolerando assim uma falha no R1. Depois da falha o R1 passa a ter a interface e0/0 como Init e a interface e0/1 como Backup


```

interface Ethernet0/0
ip address 192.168.200.254 255.255.255.0
standby 1 ip 192.168.200.100
standby 1 priority 105
standby 1 preempt delay minimum 60
standby 1 track 2 decrement 10
!
interface Ethernet0/1
ip address 192.168.100.254 255.255.255.0
standby 1 ip 192.168.100.100
standby 1 priority 105
standby 1 preempt delay minimum 60
standby 1 track 1 decrement 10
!

```

Tolerar falhas com o interface tracking - Topologia 5



No R10 foi feito o seguinte:

```

conf t
track 1 interface e0/1 line-protocol
exit
track 2 interface e0/0 line-protocol
exit

int e0/0
standby 1 track 1

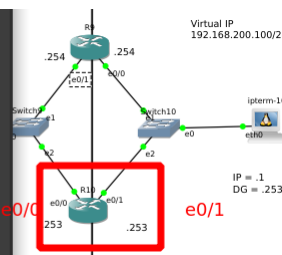
int e0/1
standby 1 track 2

```

```

interface Ethernet0/0
ip address 192.168.100.253 255.255.255.0
standby 1 ip 192.168.100.100
standby 1 preempt delay minimum 60
standby 1 track 1 decrement 10
!
interface Ethernet0/1
ip address 192.168.200.253 255.255.255.0
standby 1 ip 192.168.200.100
standby 1 preempt delay minimum 60
standby 1 track 2 decrement 10
!

```



Resultado de ter desligado a interface e0/0 do R9

Depois de ter desligado a interface e0/0 do R9, o R10 torna-se imediatamente AR em ambas as redes, no entanto no R9 a interface que foi desligada fica a Init e a interface que continua operacional, 1 minuto depois, fica em Standby

```

(Escape character is '^').
R9(config-if)#
R9(config-if)#
R9(config-if)#exit
R9(config)#int e0/0
R9(config-if)#shut
R9(config-if)#
*Nov 3 16:03:22.444: %TRACK-6-STATE: 1 interface Et0/0 line-protocol Up -> Down
R9(config-if)#
*Nov 3 16:03:22.445: %HSRP-5-STATECHANGE: Ethernet0/0 Grp 1 state Active -> Init
R9(config-if)#
*Nov 3 16:03:24.450: %LINK-5-CHANGED: Interface Ethernet0/0, changed state to administratively down
*Nov 3 16:03:25.456: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to down
R9(config-if)#
*Nov 3 16:04:25.209: %HSRP-5-STATECHANGE: Ethernet0/1 Grp 1 state Active -> Speak
R9(config-if)#
*Nov 3 16:04:36.708: %HSRP-5-STATECHANGE: Ethernet0/1 Grp 1 state Speak -> Standby
R9(config-if)#do sh standb
R9(config-if)#do sh standb
Ethernet0/0 - Group 1
State is Active
2 state changes, last state change 00:00:00
Virtual IP address is 192.168.100.100
Active virtual MAC address is 0000.0c07.0000
Local virtual MAC address is 0000.0c07.0000
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.232 secs
Preemption enabled, delay min 60 secs
Active router is local
Standby router is 192.168.100.254, priority 100 (default 100)
Track object 1 state Up decrement 10
Group name is "hsrp-Et0/0-1" (default)
Ethernet0/1 - Group 1
State is Active
2 state changes, last state change 00:00:00
Virtual IP address is 192.168.200.100
Active virtual MAC address is 0000.0c07.0000
Local virtual MAC address is 0000.0c07.0000
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.872 secs
Preemption enabled, delay min 60 secs

```

HSRP e Autenticação

Configure o R11 e o R10 com a versão 2 do hsrp e em baixo esta um exemplo

```

R11(config-if)#exit
R11(config)#int e0/1
R11(config-if)#standby 1 ip 192.168.100.100
R11(config-if)#stand
R11(config-if)#standby 1 pree
R11(config-if)#standby 1 preempt del
R11(config-if)#standby 1 preempt delay mini
R11(config-if)#standby 1 preempt delay minimum 60
R11(config-if)#stand
R11(config-if)#standby 1 priority 105
R11(config-if)#stand
R11(config-if)#standby vers
R11(config-if)#standby version 2

```

Depois foi só configurar uma interface para usar a autenticação como mostra em baixo

```
R11
/bin/bash 80x24

Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.

R11(config-if)#
R11(config-if)#exit
R11(config)#int e0/1
R11(config-if)#standby 1 authentication md5 key-string SeGreDoSeGur0
R11(config-if)#
*Nov  3 16:35:25.029: %HSRP-4-BADAUTH2: Bad authentication from 192.168.100.253
R11(config-if)#
*Nov  3 16:35:55.133: %HSRP-4-BADAUTH2: Bad authentication from 192.168.100.253
R11(config-if)#

R12
/bin/bash 80x17

R12(config)#
R12(config)#
R12(config)#
R12(config)#
R12(config)#
R12(config)#
R12(config)#int e0/0
R12(config-if)#
*Nov  3 16:35:57.208: %HSRP-4-BADAUTH2: Bad authentication from 192.168.100.254
R12(config-if)#standby 1 authentication md5 key-string SeGreDoSeGur0
R12(config-if)#do
*Nov  3 16:36:19.174: %HSRP-5-STATECHANGE: Ethernet0/0 Grp 1 state Active -> Speak
R12(config-if)#do wr
Building configuration...
[OK]
R12(config-if)#
```