

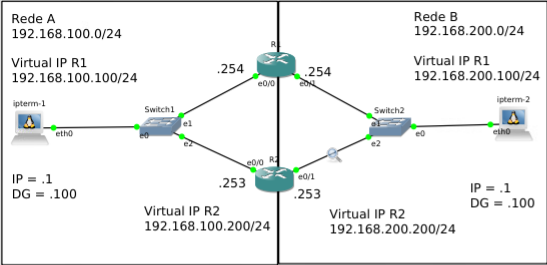
Teste 03

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)

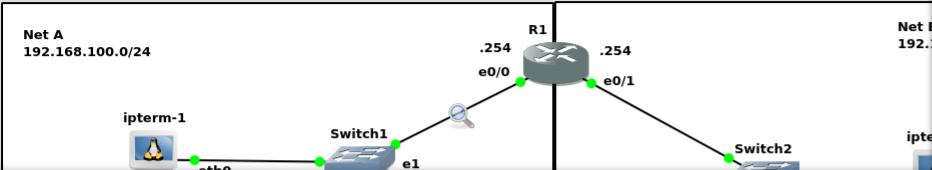
R2#
*Nov 10 15:41:14.358: %HSRP-4-DIFFVIP1: Ethernet0/1 Grp 1 active routers
192.168.200.100 is different to the locally configured address 192.168.
R2#
*Nov 10 15:41:46.713: %HSRP-4-DIFFVIP1: Ethernet0/0 Grp 1 active routers
192.168.100.100 is different to the locally configured address 192.168.
R2#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

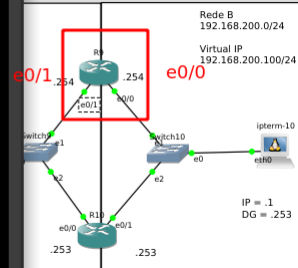
Depois da falha o R1 passa a ter a interface e0/0 como Init e a interface e0/1 como Backup


```

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

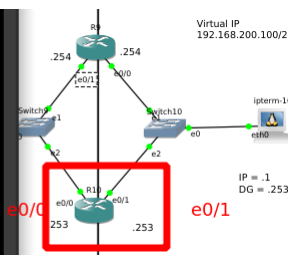
int e0/1
standby 1 track 2

```

```

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
DG = .254
.253
.253
IP = .1
DG = .254
.253
.253
R10(config-if)#do sh standb
R10(config-if)#do sh standb
Ethernet0/0 - Group 1
State is Active
2 state changes, last state change 00
Virtual IP address is 192.168.100.100
Active virtual MAC address is 0000.0c07
Local virtual MAC address is 0000.0c07
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, prio
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
Virtual IP address is 192.168.200.100
Active virtual MAC address is 0000.0c07
Local virtual MAC address is 0000.0c07
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.872 secs
Preemption enabled, delay min 60 secs

```

HSRP e Autenticação

Configurei 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)#
```