Episodio 4.2 · La receta PCC completa, paso a paso

Balanceo multi-WAN con MikroTik: PCC, ECMP y PBR · EVANGIT · Comandos de la clase

1 · Tablas

en **CORE-ISP** · paso 1

```
/routing table add name=por-isp1 fib comment="PCC: salida por el ISP1"
/routing table add name=por-isp2 fib comment="PCC: salida por el ISP2"
```

2 · Rutas

en **CORE-ISP** · paso 2 (como el manual; en el 4.5 se vuelven recursivas)

```
/ip route add dst-address=0.0.0.0/0 gateway=100.64.0.1 \
    routing-table=por-isp1 check-gateway=ping \
    comment="PCC: default ISP1"
/ip route add dst-address=0.0.0.0/0 gateway=100.64.0.5 \
    routing-table=por-isp2 check-gateway=ping \
    comment="PCC: default ISP2"
/ip route print where dst-address=0.0.0.0/0
```

3 · Lo propio

en **CORE-ISP** · paso 3

```
:foreach r in={10.10.10.0/24;10.20.0.0/24;10.30.0.0/24;100.64.0.0/29;192.168.56.0/24} \
    do={/ip firewall address-list add list=redes-propias \
    address=$r comment="no marcar"}
/ip firewall mangle add chain=prerouting dst-address-list=redes-propias \
    action=accept comment="PCC: lo propio va por main"
```

Entrada por WAN

en **CORE-ISP** · input del manual (ver 4.3)

```
/ip firewall mangle add chain=input in-interface=ether2 \
    connection-state=new action=mark-connection \
    new-connection-mark=ISP1 comment="PCC: entra por WAN1"
/ip firewall mangle add chain=input in-interface=vlan200-wan2 \
    connection-state=new action=mark-connection \
    new-connection-mark=ISP2 comment="PCC: entra por WAN2"
```

4 · PCC

en **CORE-ISP** · paso 4

```
/ip firewall mangle add chain=prerouting in-interface=vlan300-clientes \
    connection-mark=no-mark connection-state=new \
    dst-address-type=!local per-connection-classifier=both-addresses:2/0 \
    action=mark-connection new-connection-mark=ISP1 \
    comment="PCC: abonados 2/0 -> ISP1"
/ip firewall mangle add chain=prerouting in-interface=vlan300-clientes \
    connection-mark=no-mark connection-state=new \
    dst-address-type=!local per-connection-classifier=both-addresses:2/1 \
    action=mark-connection new-connection-mark=ISP2 \
    comment="PCC: abonados 2/1 -> ISP2"
```

5 · Marca de ruteo

en **CORE-ISP** · paso 5

```
/ip firewall mangle add chain=prerouting in-interface=vlan300-clientes \
    connection-mark=ISP1 action=mark-routing new-routing-mark=por-isp1 \
    passthrough=no comment="PCC: ISP1 a su tabla"
/ip firewall mangle add chain=prerouting in-interface=vlan300-clientes \
    connection-mark=ISP2 action=mark-routing new-routing-mark=por-isp2 \
    passthrough=no comment="PCC: ISP2 a su tabla"
/ip firewall mangle add chain=output connection-mark=ISP1 \
    action=mark-routing new-routing-mark=por-isp1 \
    passthrough=no comment="PCC: respuestas del router ISP1"
/ip firewall mangle add chain=output connection-mark=ISP2 \
    action=mark-routing new-routing-mark=por-isp2 \
    passthrough=no comment="PCC: respuestas del router ISP2"
/ip firewall mangle print
```

6 · NAT

en **CORE-ISP** · ya estaba desde el laboratorio base

```
/ip firewall nat print
```

Verificar

en **CLIENTE-01** · 72 pings y reparto

```
# En el CLIENTE:
:local ok 0; :for d from=1 to=9 do={:for a from=11 \
    to=18 do={:set ok ($ok + [/ping ("203.0.113." . $d) src-address=("10.30.0." . $a) count=1])}}; \
    :put ("pings respondidos: " . $ok . "/72")
# En el CORE:
:put ("salen con 100.64.0.2 (ISP1): " . [:len [/ip firewall connection find where src-address~"^10.30.0.1[1-
8]" and reply-dst-address~"^100.64.0.2"]] . "  con 100.64.0.6 (ISP2): " . [:len [/ip firewall connection fin
d where src-address~"^10.30.0.1[1-8]" and reply-dst-address~"^100.64.0.6"]])
:put ("ISP1 y sale por ISP1: " . [:len [/ip firewall connection find where connection-mark=ISP1 and src-addr
ess~"^10.30.0.1[1-8]" and reply-dst-address~"^100.64.0.2"]] . "  ISP2 y sale por ISP2: " . [:len [/ip firewa
ll connection find where connection-mark=ISP2 and src-address~"^10.30.0.1[1-8]" and reply-dst-address~"^100.
64.0.6"]])
# En el UPSTREAM:
/ip firewall raw print stats
```

Lo que no copiamos

en **CORE-ISP** · PCC en output del manual (NO dejar asi en el lab)

```
/ip firewall mangle add chain=output connection-mark=no-mark \
    connection-state=new per-connection-classifier=both-addresses:2/0 \
    action=mark-connection new-connection-mark=ISP1 \
    comment="PCC: router 2/0 -> ISP1" place-before=[find comment="PCC: respuestas del router ISP1"]
/ip firewall mangle add chain=output connection-mark=no-mark \
    connection-state=new per-connection-classifier=both-addresses:2/1 \
    action=mark-connection new-connection-mark=ISP2 \
    comment="PCC: router 2/1 -> ISP2" place-before=[find comment="PCC: respuestas del router ISP1"]
/ping 100.64.0.5 count=2
# Quitarlas:
/ip firewall mangle remove [find comment~"PCC: router 2/"]
```

Las IP 100.64.0.x (WAN1 y WAN2), 10.20.0.x, 192.168.1.x y 203.0.113.x son del laboratorio: en tu router usa tus interfaces, gateways y redes. Donde dice TU-..., pon tu propio dato. Antes de tocar rutas o mangle en producción: /export file=antes (cópialo a tu PC) y Safe Mode (Ctrl+X).