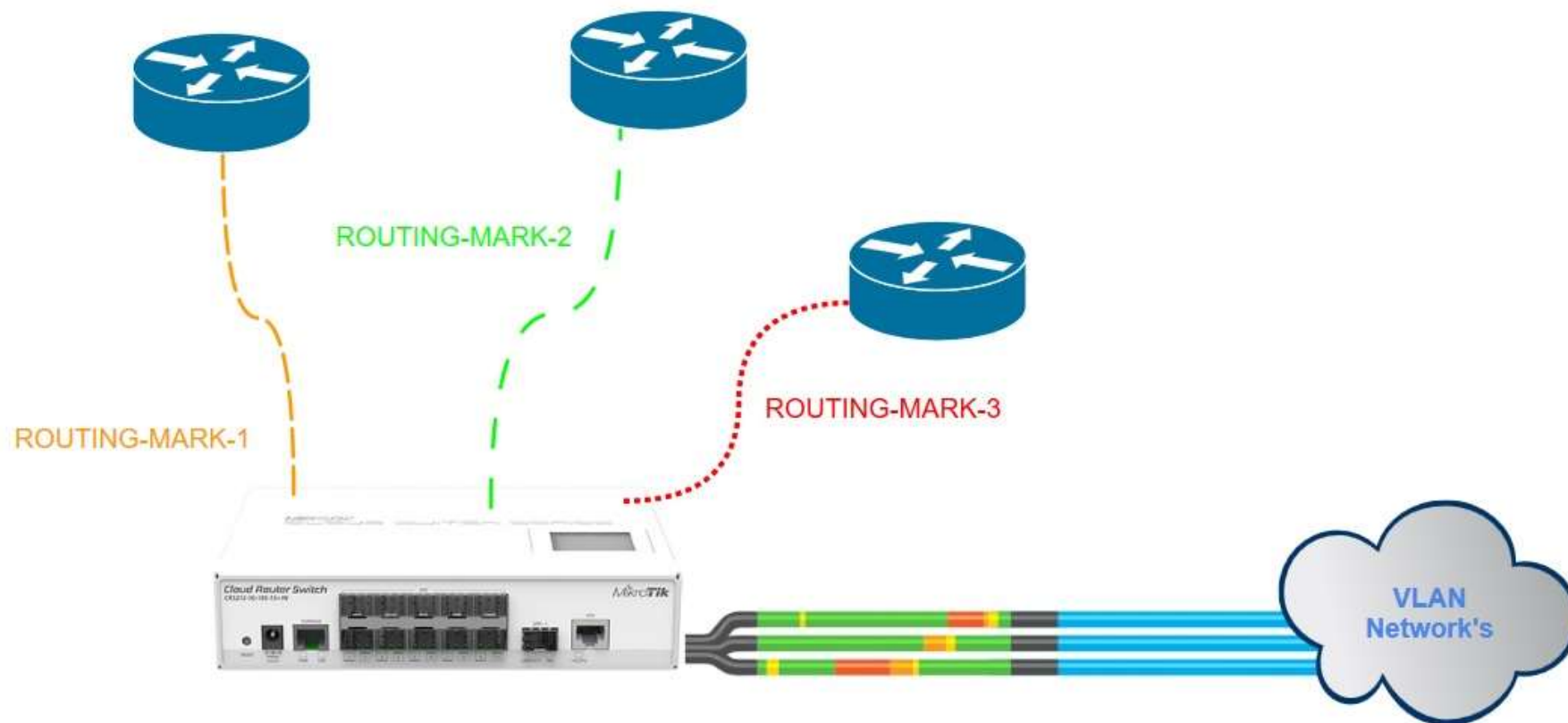


CASO DE ÉXITO:

Routers MikroTik utilizando mangle para ruteos especiales

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PASOS BÁSICOS:

- VLAN's (dot1Q)
- Mangle
- Mark-Routing
- Enrutamiento

VLAN

Una VLAN, acrónimo de virtual LAN (Red de área local virtual), es un método para crear redes lógicas independientes dentro de una misma red física.

Protocolo IEEE 802.1Q

Firewall		Route List									
Filter Rules		NAT		Routes		Nexthops		Rules		VRF	
#	Action	Dst. Address		Gateway		Distance	Routing Mark	Ref. Source	Comment		
Interface List											
Interface		Ethernet		EoIP Tunnel		IP Tunnel		GRE Tunnel		VLAN	
Name		Type	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	VLAN ID	Interface	Comment
R	Conection-BocaDMonte1	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	796	sfp1	
R	Conection-BocaDMonte2	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	797	sfp1	
R	Conection-VarredaZ18	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	798	sfp1	
R	genesis-chimaltenango	VLAN	2.7 Mbps	171.3 kbps	421	324	0 bps	171.3 kbps	810	sfp1	
R	Conection-Totonicapan	VLAN	968 bps	1008 bps	2	2	0 bps	1008 bps	825	sfp1	
R	Conection-Salama	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	826	sfp1	
R	Conection-Cuilapa	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	827	sfp1	
R	Conection-Chimaltenango	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	828	sfp1	
R	Conection-Tiquisate	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	829	sfp1	
R	Conection-TecunUman	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	830	sfp1	
R	Conection-Barberena	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	831	sfp1	
R	Conection-Sanarate	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	832	sfp1	
R	Conection-La-Trinidad	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	833	sfp1	
R	Conection-Pradera-Chimal	VLAN	0 bps	22.3 kbps	0	8	0 bps	22.3 kbps	834	sfp1	
R	Conection-Poptun	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	835	sfp1	
R	Conection-Sumpango	VLAN	592 bps	592 bps	1	1	0 bps	592 bps	836	sfp1	
R	Conection-Sayaxche	VLAN	4.7 kbps	4.0 kbps	1	1	0 bps	4.0 kbps	837	sfp1	
R	Conection-La-Libertad	VLAN	0 bps	5.7 kbps	0	4	0 bps	5.7 kbps	838	sfp1	
R	Conection-MelchorMencos	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	839	sfp1	
R	Conection-San-Luis	VLAN	880 bps	1056 bps	2	2	0 bps	1056 bps	840	sfp1	
R	Conection-Panajachel	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	841	sfp1	
R	La Torre-Xela	VLAN	41.0 kbps	21.6 kbps	21	15	0 bps	21.6 kbps	844	sfp1	
R	Conection-pete-Karrosi	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	845	sfp1	
R	Conection-Peten-MundoM...	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	846	sfp1	
R	conection-PetenMetroPlaza	VLAN	0 bps	0 bps	0	0	0 bps	0 bps	847	sfp1	
R	torre-sn-marcos	VLAN	23.2 kbps	999.7 kbps	44	86	0 bps	999.7 kbps	849	sfp1	
R	distelsa-cs2	VLAN	3.2 kbps	5.0 kbps	6	7	0 bps	5.0 kbps	910	sfp1	
R	BPO-Back	VLAN	0 bps	2.6 kbps	0	3	0 bps	2.6 kbps	919	sfp1	
R	distelsa-americas	VLAN	27.7 kbps	37.8 kbps	15	16	0 bps	37.8 kbps	962	sfp1	

MANGLE

Mangle es una especie de 'marcador' que marca los paquetes para el procesamiento futuro con marcas especiales. Muchas otras instalaciones en RouterOS hacen uso de estas marcas, por ejemplo, queue trees, NAT, el **enrutamiento**. Identifican un paquete basado en su marca y lo procesan en consecuencia. Las marcas de mangle sólo existen en el router, no se transmiten a través de la red.

- Quick Set
- Interfaces
- Bridge
- PPP
- Switch
- Mesh
- IP
- IPv6
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- LCD
- Partition
- Make Supout.tif
- Manual
- New WinBox
- Exit

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

+ - [check] [X] [lock] [filter] 00 Reset Counters 00 Reset All Counters

Find all

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Interface	Out. Int...	New Routing Mark	Bytes	Packets	Conn
34	mark routing	prerouting						conection-Florida		CONNECTION	23.1 GiB	255 228 ...	
35	mark routing	prerouting						conection-AguilarBatres		CONNECTION	6.0 GiB	49 652 481	
36	mark routing	prerouting						conection-EL-Punto		CONNECTION	21.6 MiB	143 991	
37	mark routing	prerouting						conection-CC-Moserrat		CONNECTION	16.7 GiB	139 474 ...	
38	mark routing	prerouting						conection-MetaMercado		CONNECTION	22.0 MiB	144 023	
39	mark routing	prerouting						conection-Mega6		CONNECTION	4220.8 MiB	32 482 870	
40	mark routing	prerouting						conection-Bosques		CONNECTION	6.5 GiB	52 507 920	
41	mark routing	prerouting						conection-trebol		CONNECTION	3108.6 MiB	18 178 639	
42	mark routing	prerouting						conection-CCzona4		CONNECTION	3163.9 MiB	20 397 525	
43	mark routing	prerouting						Conection-Merc-Parroquia		CONNECTION	5.0 GiB	25 189 004	
44	mark routing	prerouting						Conection-SanFran		CONNECTION	3593.1 MiB	20 013 475	
45	mark routing	prerouting						conection-faro		CONNECTION	5.2 GiB	29 093 891	
46	mark routing	prerouting						conection-isla		CONNECTION	21.0 MiB	144 008	
47	mark routing	prerouting						conection-SanCris2		CONNECTION	21.6 MiB	143 973	
48	mark routing	prerouting						conections-z18		CONNECTION	42.1 GiB	295 119 ...	
49	mark routing	prerouting						conection-SnRafael		CONNECTION	21.5 MiB	143 897	
50	mark routing	prerouting						Conection-SN-Mig-Pet		CONNECTION	3881.5 MiB	21 987 517	
51	mark routing	prerouting						Conection-VillaHem		CONNECTION	11.4 GiB	54 918 203	
52	mark routing	prerouting						Conection-Villanueva-6av		CONNECTION	6.9 GiB	34 777 529	
53	mark routing	prerouting						conection-Montufar		CONNECTION	6.3 GiB	35 795 562	
54	mark routing	prerouting						Conection-Z1-18Calle		CONNECTION	3032.6 MiB	13 544 415	
55	mark routing	prerouting						Conection-Pacif-VillaHem		CONNECTION	7.1 GiB	46 063 015	
56	mark routing	prerouting						Conection-VillaNueva-Z1		CONNECTION	3809.1 MiB	18 089 999	
57	mark routing	prerouting						conection-jocotales		CONNECTION	4598.5 MiB	20 115 039	
58	mark routing	prerouting						conection-Capitol		CONNECTION	4465.4 MiB	26 191 542	
59	mark routing	prerouting						conection-GaleriasSur		CONNECTION	22.0 MiB	143 968	
60	mark routing	prerouting						conection-VillaCanales		CONNECTION	9.6 GiB	52 425 257	
61	mark routing	prerouting						Conection-Sn-LucasCC		CONNECTION	3868.6 MiB	23 540 967	
62	mark routing	prerouting						El-Frutal		CONNECTION	2526.1 MiB	18 549 597	
63	mark routing	prerouting						Conection-BocaDMonte1		CONNECTION	73.2 MiB	439 287	
64	mark routing	prerouting	10.10.32.0/24					Amatitlan-Core		Gestion	244.2 MiB	1 335 728	
65	mark routing	prerouting						Conection-BocaDMonte2		CONNECTION	114.1 MiB	735 080	
66	mark routing	prerouting						Conection-VarredaZ18		CONNECTION	3763.1 MiB	33 119 402	
67	mark routing	prerouting						Conection-Sacatepequez		CONNECTION	9.8 GiB	51 222 139	
68	mark routing	prerouting						Conection-Chimaltenango		CONNECTION	4558.6 MiB	26 035 727	
69	mark routing	prerouting						Conection-Sayaxche		CONNECTION	5.9 GiB	25 456 181	

185 items

Mangle Rule <172.16.99.0/24>

General Advanced Extra Action Statistics

Chain: prerouting

Src. Address: 190.113.88.2

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

P2P:

In. Interface: vlan-Ejemplo

Out. Interface:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

Connection Type:

Connection State:

Connection NAT State:

OK

Cancel

Apply

Enable

Comment

Copy

Remove

Reset Counters

Reset All Counters

disabled

Mangle Rule <172.16.4.0/24>

General Advanced Extra Action Statistics

Chain: prerouting

Src. Address: 172.16.4.0/24

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

P2P:

In. Interface: Escuintla-640

Out. Interface:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

Connection Type:

Connection State:

Connection NAT State:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

enabled

Mangle Rule <>

General Advanced Extra Action Statistics

Chain: prerouting

Src. Address:

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

P2P:

In. Interface: conection-AguilarBatres

Out. Interface:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

Connection Type:

Connection State:

Connection NAT State:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

enabled

Mark-Routing

Coloca una marca específica por el parámetro `new-routing-mark` en un paquete. Este tipo de marcas se utiliza para fines de políticas enrutamiento únicamente

Donde colocar el Marcado:

Las reglas de Mangle están organizadas en cadenas y hay 5 cadenas por default:

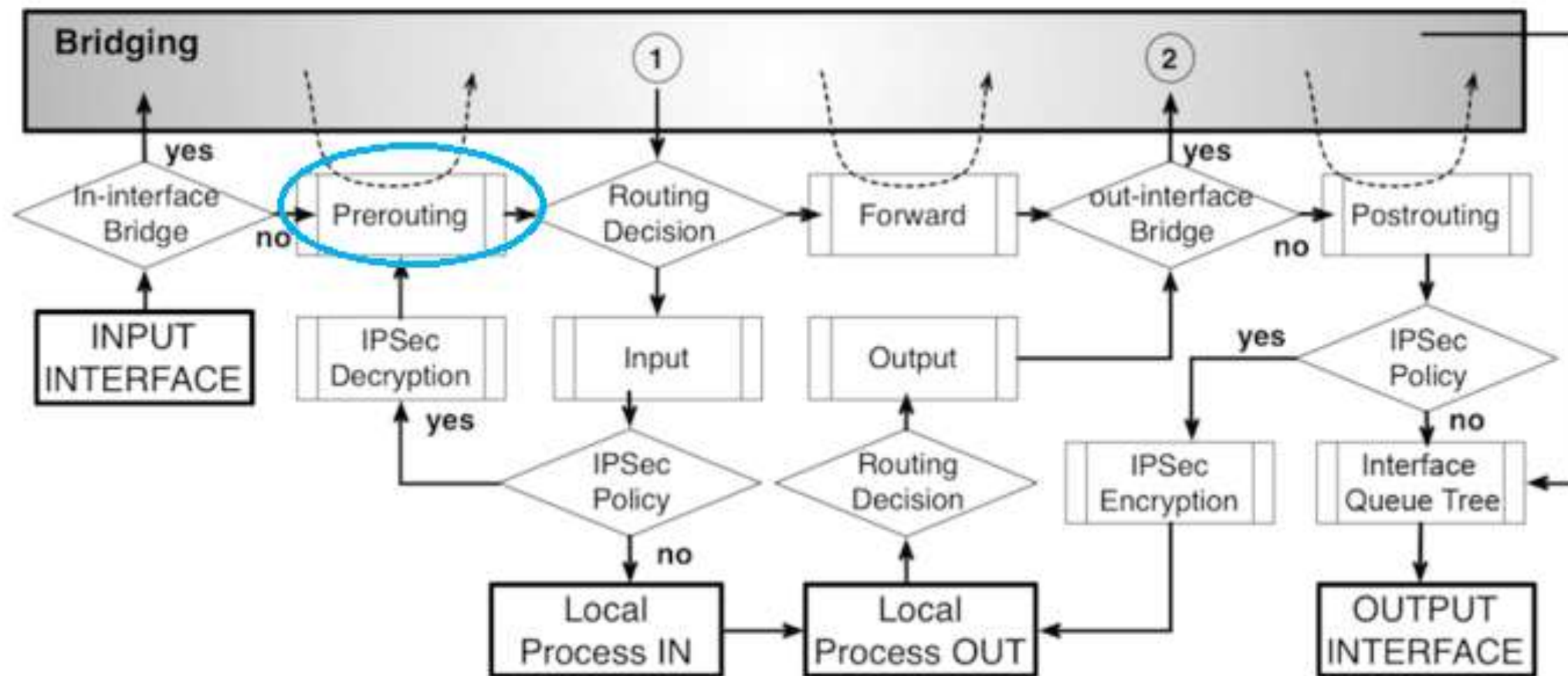
Prerouting = Hacer marcado antes del queue Global-In

Postrouting = Hacer marcado antes del queue Global-Out

Input = Hacer marcado antes del filtro Input

Output = Hacer marcado antes del filtro de Output

Forward = Hacer marcado antes del filtro de Forward



RouterOS WinBox

Safe Mode

Session: 172.16.99.1

Uptime: 266d 02:04:45 Memory: 87.6 MiB Time: 17:30:02 Date: Jan/04/2017 CPU: 15%

Quick Set

CAPsMAN

Interfaces

Wireless

Bridge

PPP

Switch

Mesh

IP

MPLS

Routing

System

Queues

Files

Log

Radius

Tools

New Terminal

MetaROUTER

Partition

Make Supout.rif

Manual

New WinBox

Exit

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

+

-

✓

✗

📁

🔍

00 Reset Counters

00 Reset All Counters

Find all

New Routing Mark contains ejemplo

#	Action	Chain	Src. Address	Dst. Address	Protocol	In. Interface	Out. Interface	Routing Mark	New Routing Mark	Bytes	Packets	Comment
8	mark routing	prerouting	172.16.99.0/24						ejemplo	2404.9 KiB	27 688	

Mangle Rule <172.16.99.0/24>

General

Advanced

Extra

Action

Statistics

Chain: prerouting

Src. Address: 172.16.99.0/24

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

P2P:

In. Interface:

Out. Interface:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

Connection Type:

Connection State:

Connection NAT State:

OK

Cancel

Apply

Enable

Comment

Copy

Remove

Reset Counters

Reset All Counters

Mangle Rule <172.16.99.0/24>

General

Advanced

Extra

Action

Statistics

Action: mark routing

☐ Log

Log Prefix:

New Routing Mark: ejemplo

☒ Passthrough

OK

Cancel

Apply

Enable

Comment

Copy

Remove

Reset Counters

Reset All Counters

1 item

Enrutamiento

Utilizando la marca de ruteo
anteriormente realizada creamos las
rutas estáticas

Route List							
Routes Nexthops Rules VRF + - ✓ ✗ 📄 🔍 Find all ▼							
Routing Mark ▼ contains ▼ ejempl ▼ + - Filter							
	Dst. Address	Gateway	Type	Distance	Routing Mark	Pref. Source	Comment
AS	▶ 0.0.0.0/0	190.113.90.249 reachable Bridge-Wan-1	unicast	1	ejemplo		Routing-Mark 1
AS	▶ 0.0.0.0/0	190.151.130.75 reachable Bridge-Wan2	unicast	1	ejemplo2		Routing-Mark2

Route List				
Routes Nexthops Rules VRF + - ✓ ✗ 📄 🔍				
	Dst. Address	Gateway	Distance	Route
AS	▶ 0.0.0.0/0	192.200.9.4 reachable cruzverde	1	CRU
AS	▶ 0.0.0.0/0	192.168.125.1 reachable panamericana	1	PAN
AS	▶ 0.0.0.0/0	192.111.100.100 reachable distelsa-data	1	DIST
AS	▶ 0.0.0.0/0	190.151.130.68 reachable vlan172	1	CON
AS	▶ 0.0.0.0/0	172.16.99.1 reachable ether2	1	
AS	▶ 0.0.0.0/0	172.16.1.1 reachable genesis-z9	1	GE
AS	▶ 0.0.0.0/0	128.1.1.200 reachable unisuper_office	1	LA
AS	▶ 0.0.0.0/0	72.252.3.114 reachable vlan172	1	GM
AS	▶ 0.0.0.0/0	10.60.30.1 reachable diveco-central	1	DI
AS	▶ 0.0.0.0/0	10.50.20.1 reachable BPO-Back	1	BP
AS	▶ 0.0.0.0/0	10.10.1.1 reachable vlan20	1	Ge
211 items				

Route <0.0.0.0/0>

General

Attributes

Dst. Address:

0.0.0.0/0

Gateway:

190.113.90.249

▼

⬆

Check Gateway:

ping

▼

▲

Type:

unicast

▼

Distance:

1

▲

Scope:

30

Target Scope:

10

Routing Mark:

ejemplo

▼

▲

Pref. Source:

▼

OK

Cancel

Apply

Enable

Comment

Copy

Remove

Route <0.0.0.0/0>

General

Attributes

Dst. Address:

0.0.0.0/0

Gateway:

190.151.130.75

▼

⬆

Check Gateway:

ping

▼

▲

Type:

unicast

▼

Distance:

1

▲

Scope:

30

Target Scope:

10

Routing Mark:

ejemplo2

▼

▲

Pref. Source:

▼

OK

Cancel

Apply

Enable

Comment

Copy

Remove



GRACIAS