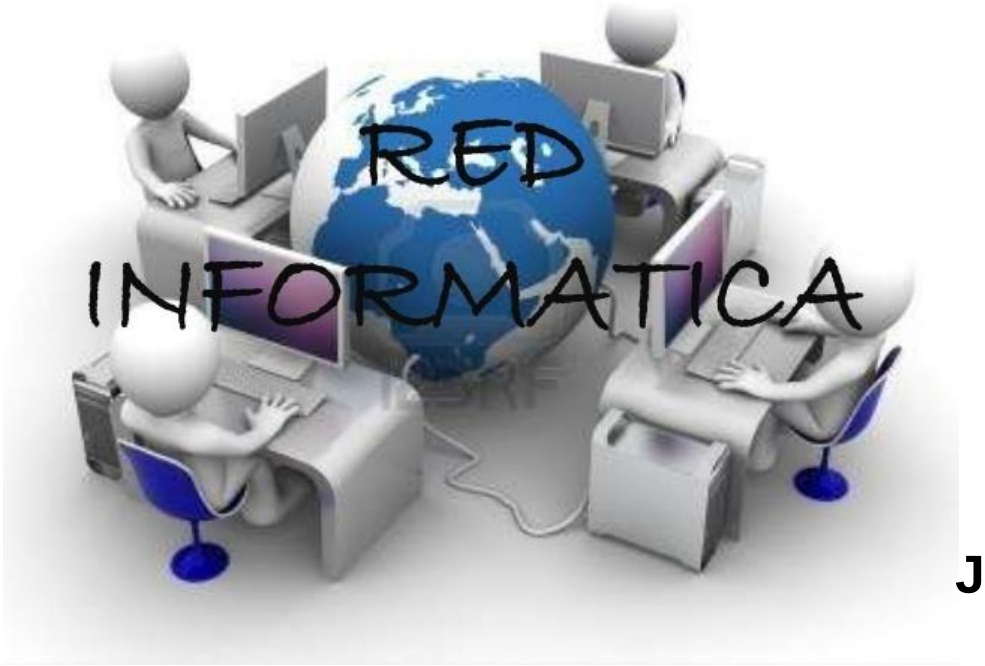
IES ZAIDÍN-VERGELES

ESQUEMA DE CONFIGURACIÓN DE RED

DEPARTAMENTO DE INFORMATICA

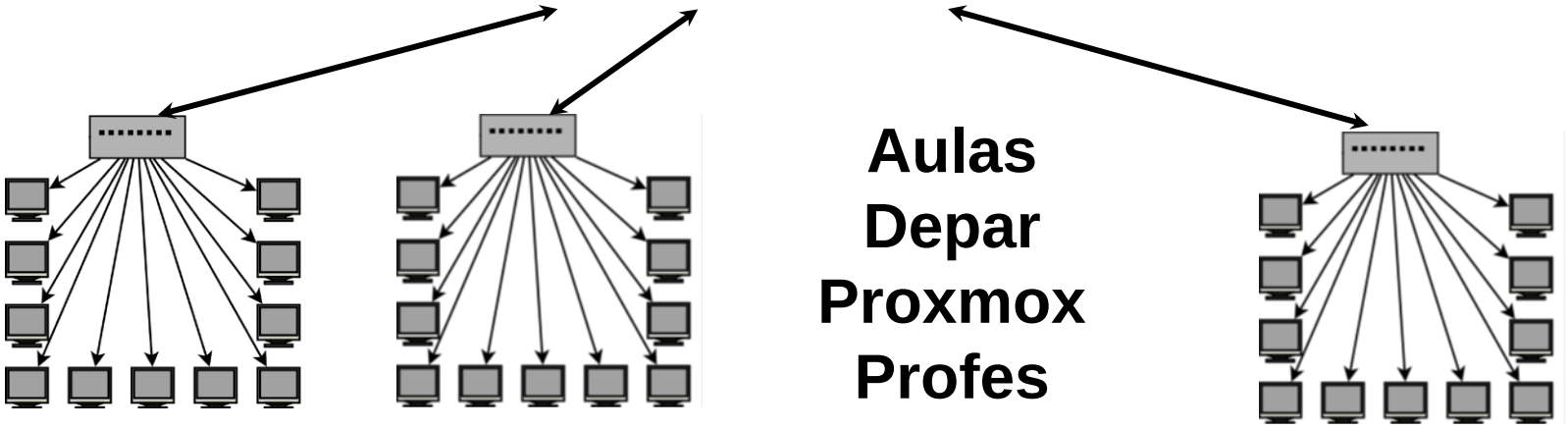


J.L. Navarro

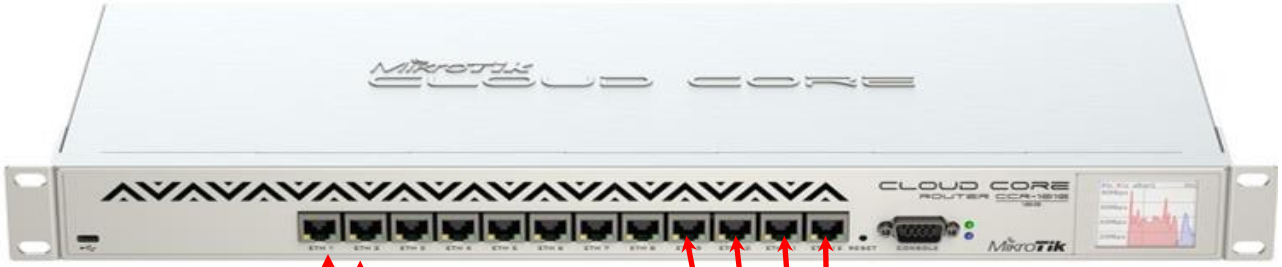
ONT Alcatel-Lucent I-240G-B

CCR1016-12G

DGS-1210-48



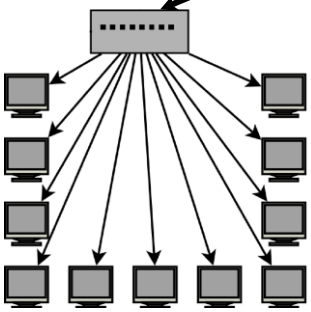
Aulas
Depar
Proxmox
Profes

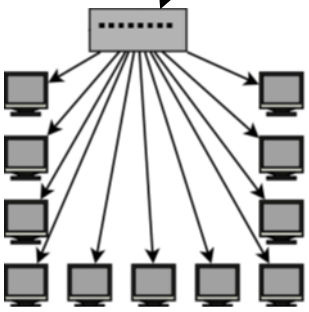


Router Fibra - WAN

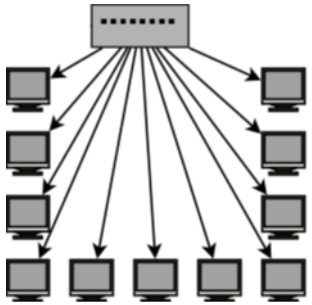
Router Equipo Dir.

Bonding
Link Aggregation

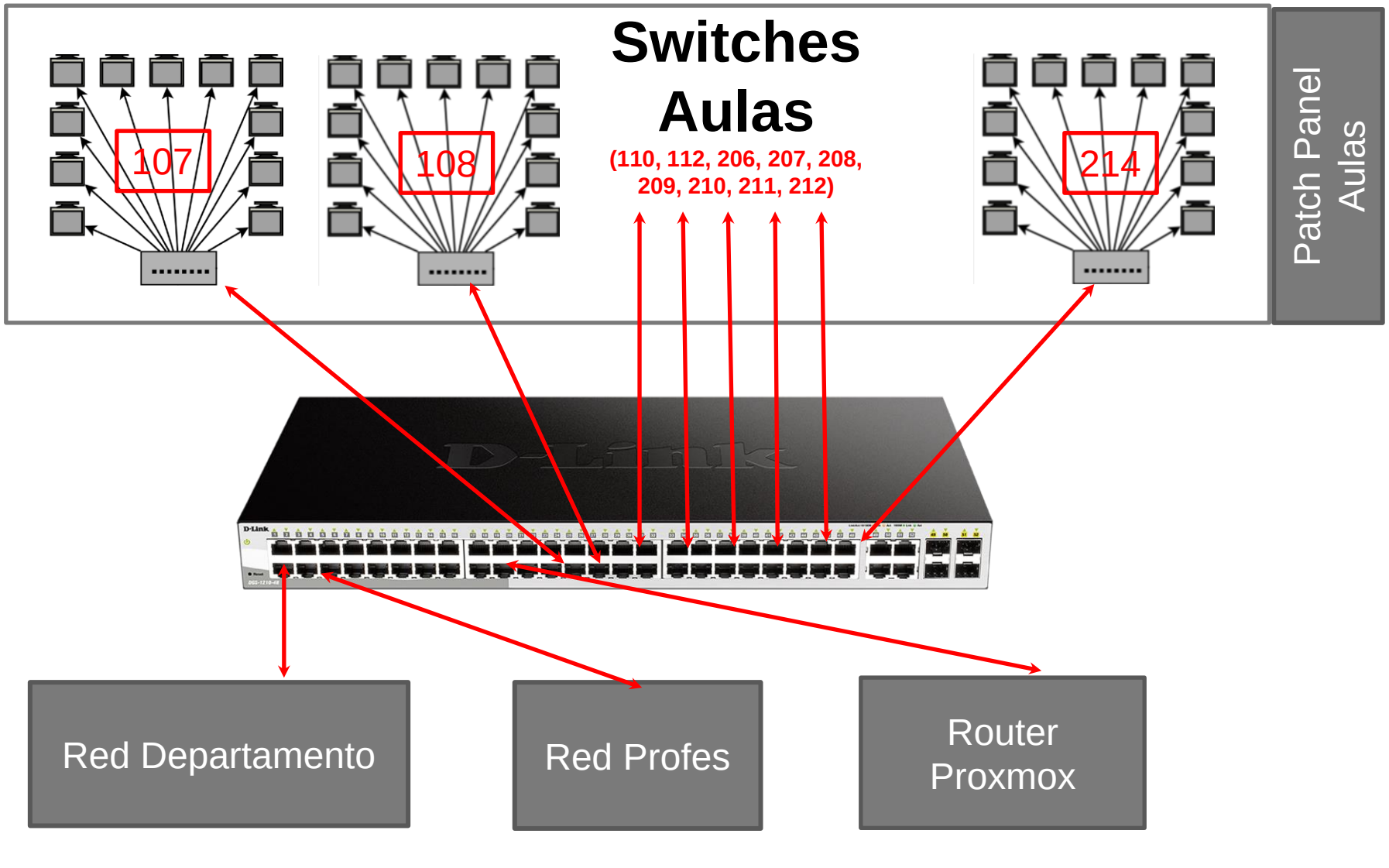




Aulas
Depar
Proxmox
Profes

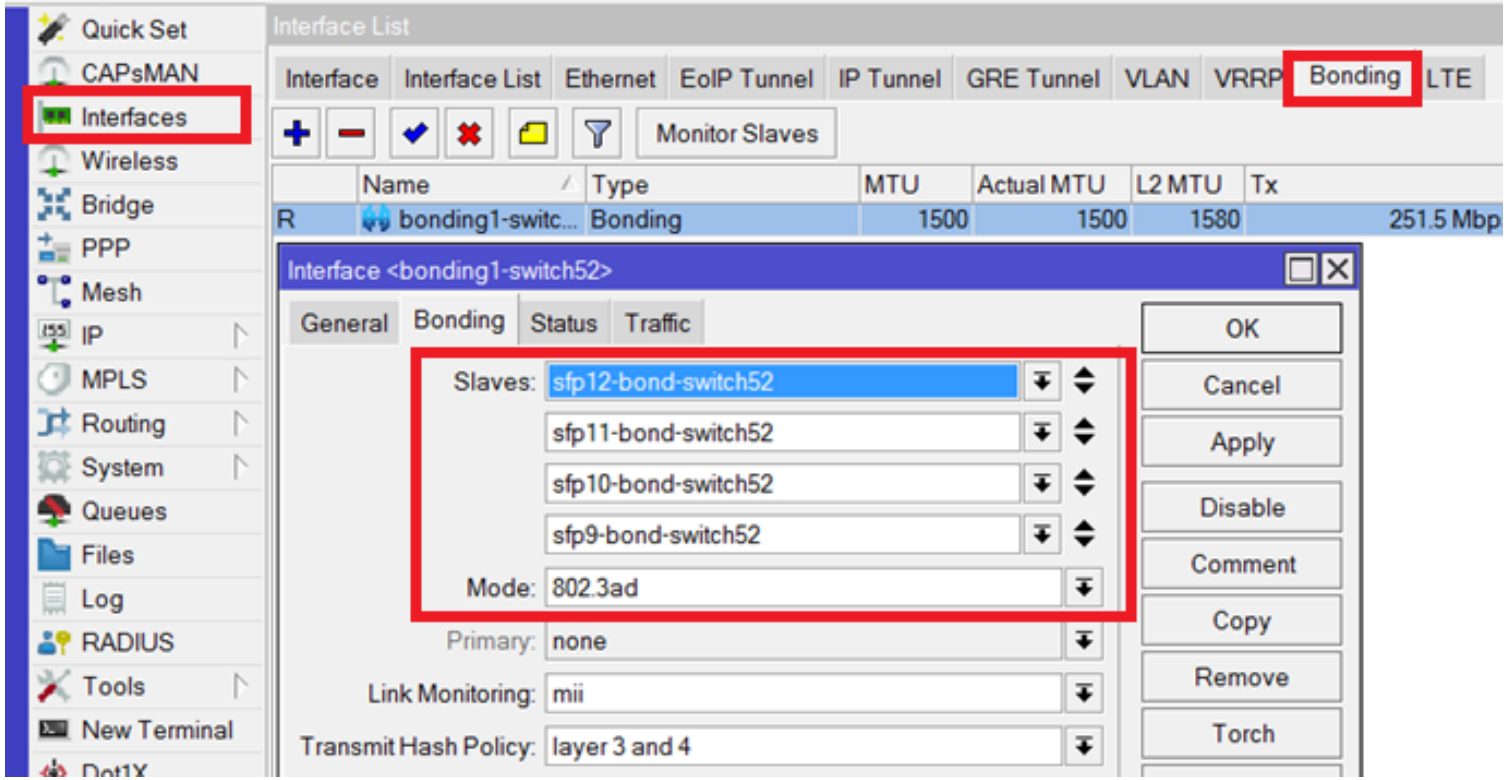


CABLEADO DEL SWITCH



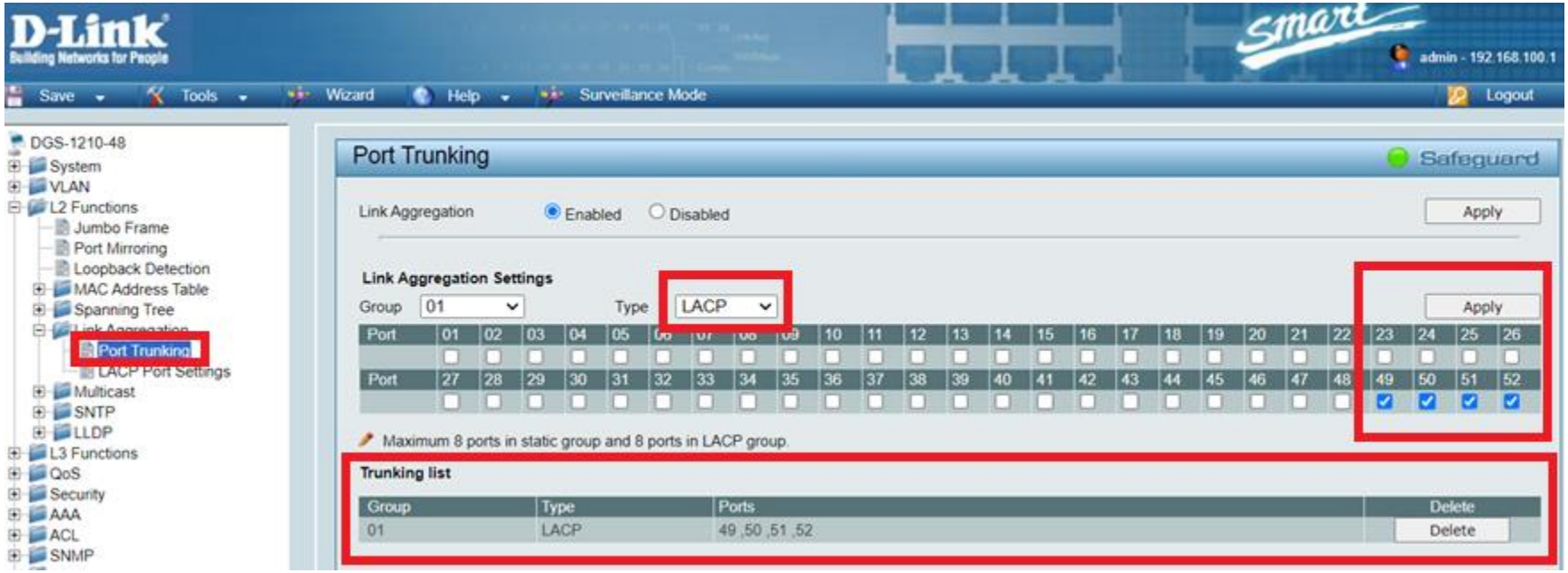
CHANNEL BOUNDING / LINK AGGREGATION / LACP (802.3ad)

- Configuración en el router Mikrotik CCR1016 enlazándolo con el Switch, protocolo LACP

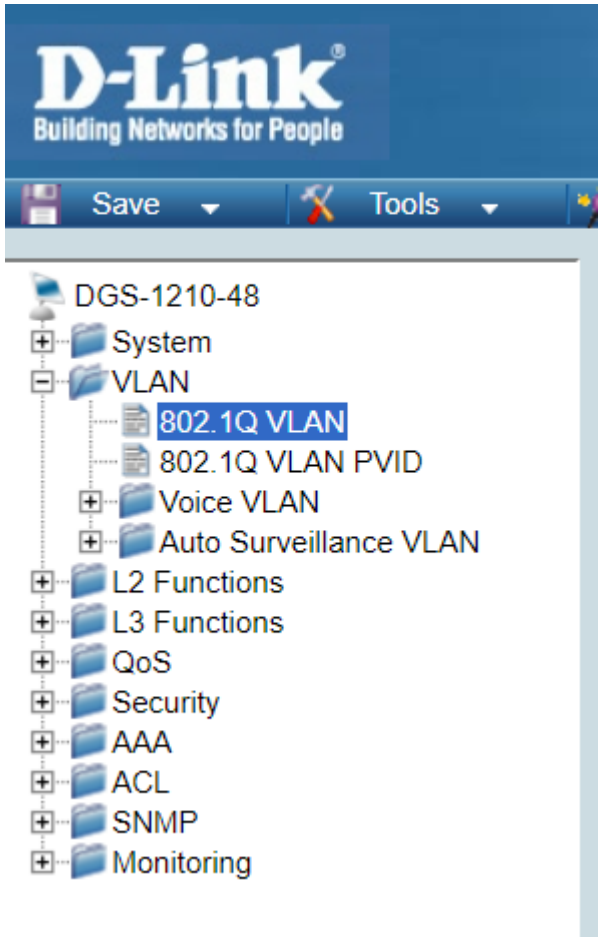


CHANNEL BOUNDING / LINK AGGREGATION / LACP (802.3ad)

- Configuración en el switch DLINK DGS-1210 enlace LACP con el router

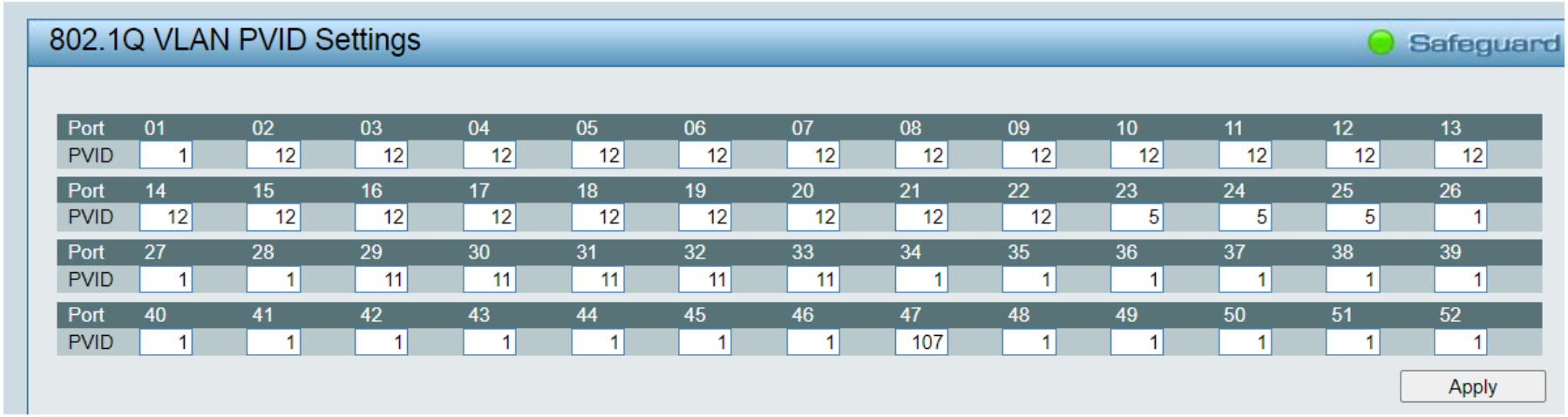


CABLEADO DE VLANS EN EL SWITCH

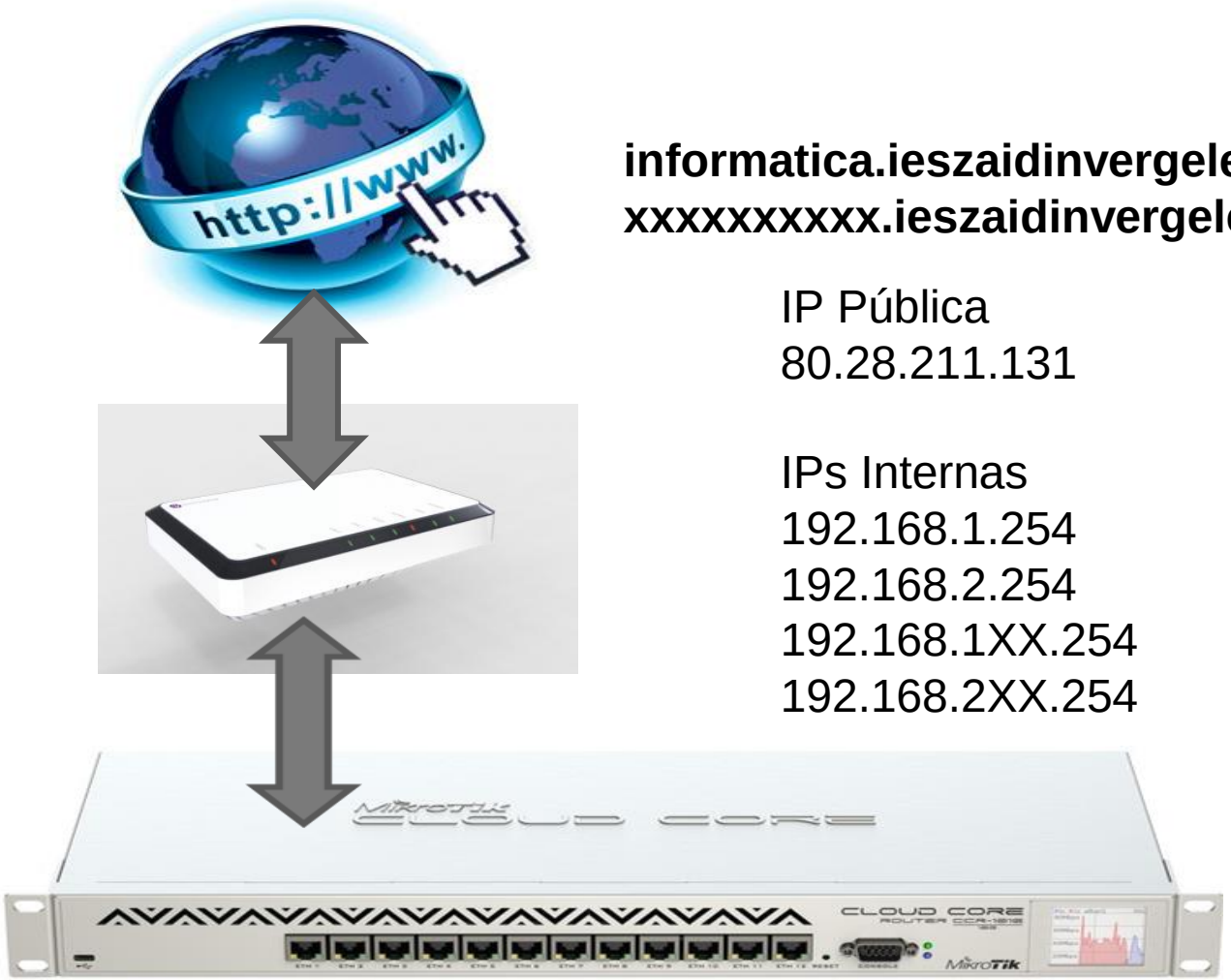


VID	VLAN Name	Untagged	Tagged
1	default	01	26-28 ,34 ,39-46 ,48-52
5	proxmox	23-25	28 ,49-52
11	profes	29-33	26-28 ,34 ,39-46 ,48-52
12	depar	02-22	49-52
107	aula107	47	49-52
108	aula108		41 ,49-52
110	aula110		26 ,49-52
112	aula112		40 ,49-52
206	aula206		34 ,49-52
207	aula207		42 ,49-52
208	aula208		43 ,49-52
209	aula209		44 ,49-52
210	aula210		45 ,49-52
211	aula211		46 ,49-52
212	aula212		48-52
214	aula214		39 ,49-52

CABLEADO DE VLANS EN EL SWITCH



CONFIGURACIÓN WAN



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IP Pública
80.28.211.131

IPs Internas
192.168.1.254
192.168.2.254
192.168.1XX.254
192.168.2XX.254

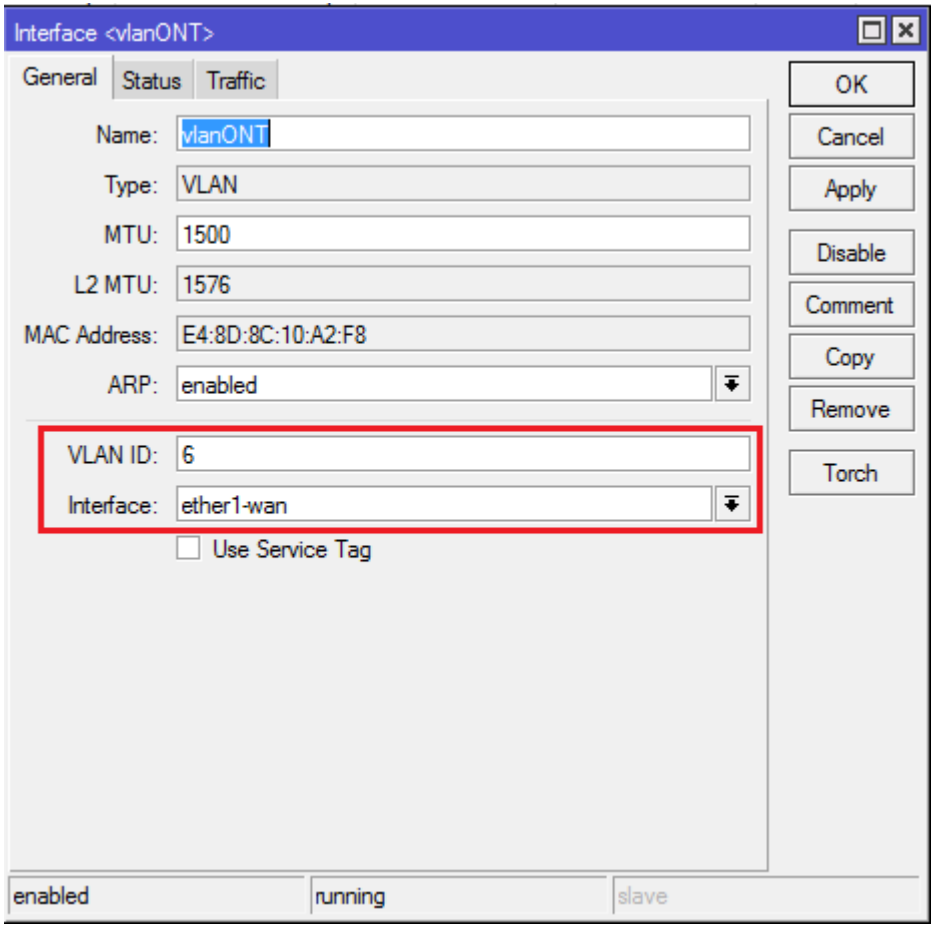
Puerto 1 - WAN
PPPoE client – VLAN ID 6

INTERFACES DEL ROUTER MIKROTIK

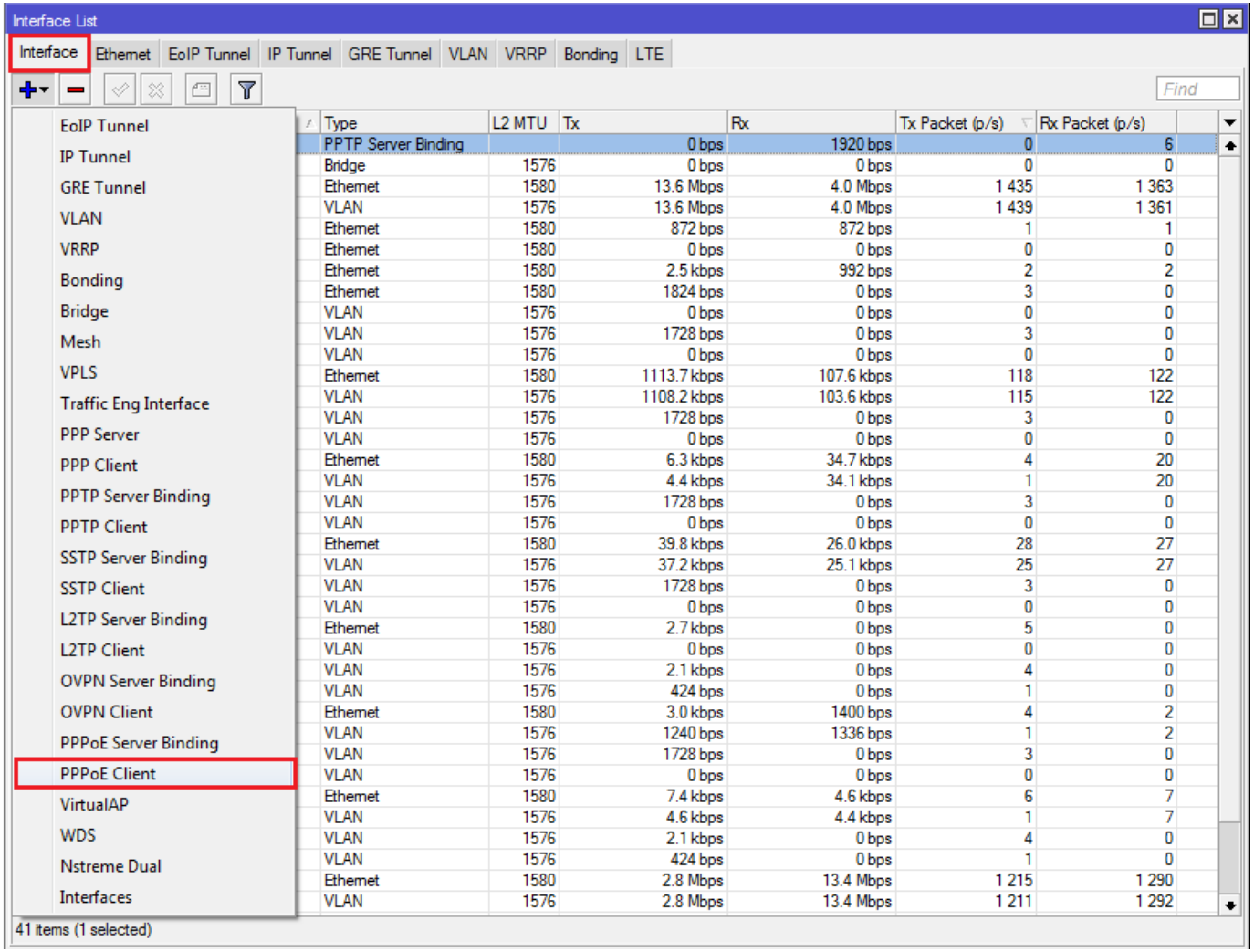
DETALLE

```
/interface ethernet
set [ find default-name=ether1 ] name=ether1-wan rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether2 ] name=ether2-direccion rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether3 ] name=ether3 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether4 ] name=ether4 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether5 ] name=ether5 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether6 ] name=ether6 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether7 ] name=ether7 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether8 ] name=ether8 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether9 ] name=ether9-bond-switch52 rx-flow-control=on \
    tx-flow-control=on
set [ find default-name=ether10 ] name=ether10-bond-switch52 rx-flow-control=\
    on tx-flow-control=on
set [ find default-name=ether11 ] name=ether11-bond-switch52 rx-flow-control=\
    on tx-flow-control=on
set [ find default-name=ether12 ] name=ether12-bond-switch52 rx-flow-control=\
    on tx-flow-control=on
```

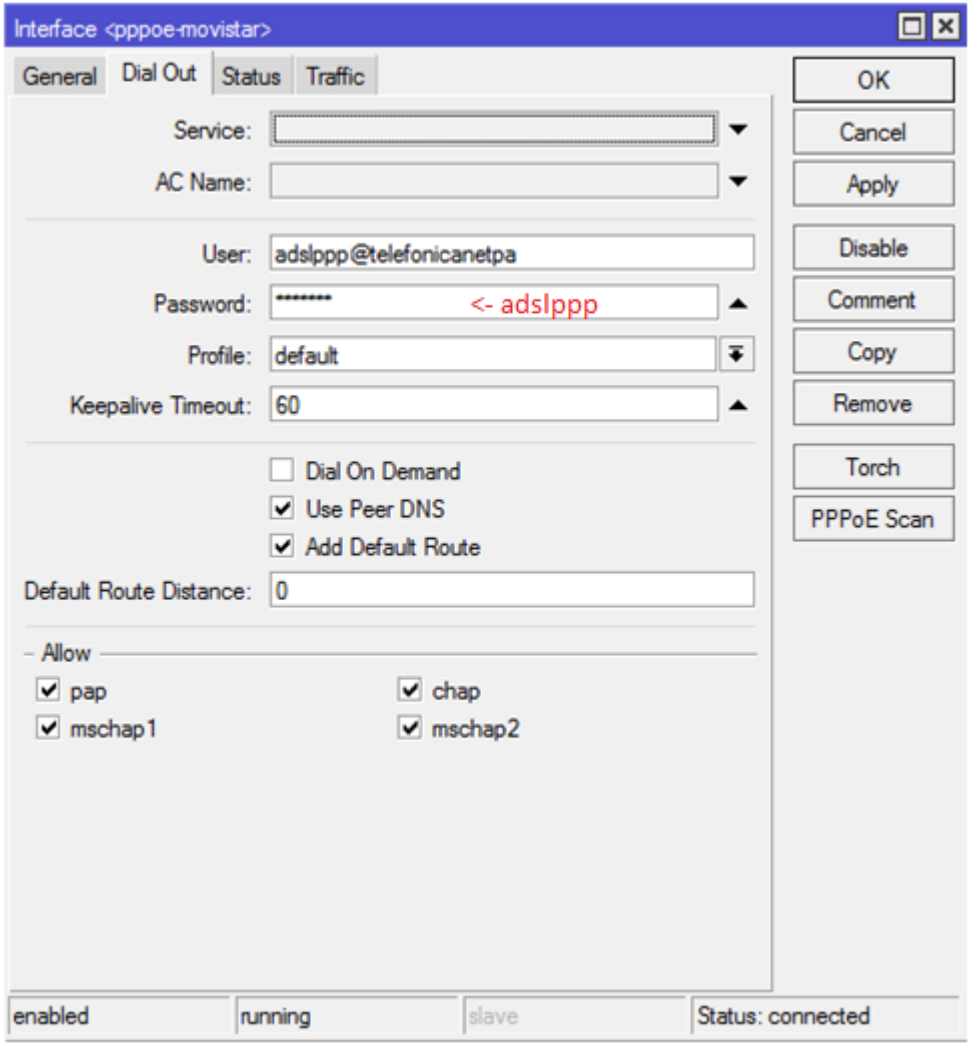
CONFIGURACIÓN WAN ROUTER FIBRA - ONT



CONFIGURACIÓN WAN ROUTER FIBRA - ONT



CONFIGURACIÓN WAN ROUTER FIBRA - ONT



CONFIGURACIÓN WAN ROUTER FIBRA - ONT

DETALLE DE CONFIGURACIÓN PPPoE CON MOVISTAR

```
/interface vlan
add interface=ether1-wan l2mtu=1576 name=vlanONT  vlan-id=6

/interface pppoe-client
add add-default-route=yes disabled=no interface=vlanONT name=pppoe-movistar \
    password=adslppp use-peer-dns=yes user=adslppp@telefonicanetpa
```

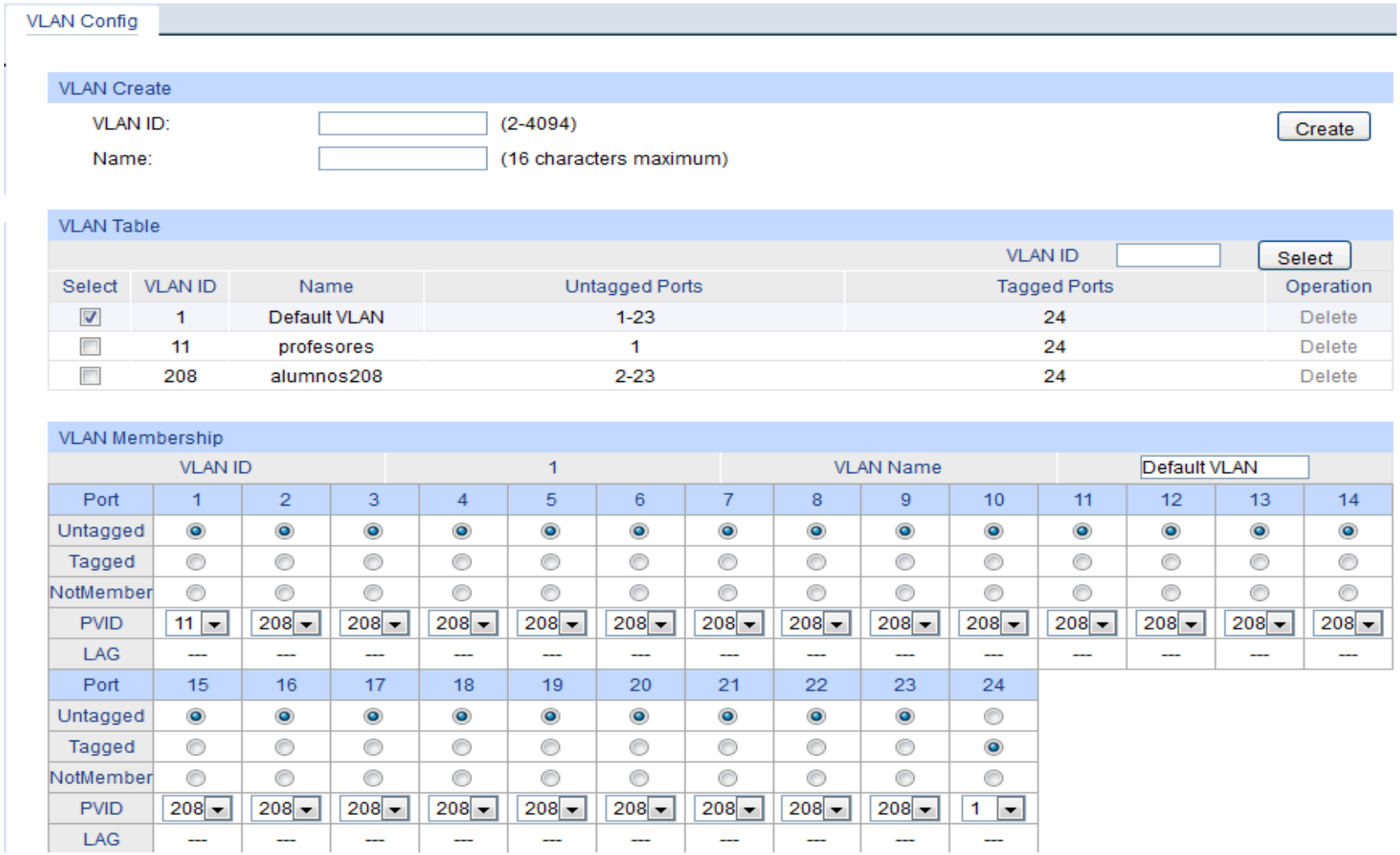
CONFIGURACIÓN AULAS
SWITCHES GESTIONABLES TL-SG2424

CONFIGURACIÓN AULAS
SWITCHES GESTIONABLES TL-SG2424

- **Ejemplo de configuración del Aula XXX**

Puertos	VLAN ID	Nombre VLAN	Dirección IP
1	11	vlanAlumnosXXX	192.168.1.X
2-23	XXX	vlanAlumnosXXX	192.168.XXX.YYY
24	10 11 XXX	AdminSwitch vlanAlumnosXXX vlanAlumnosXXX	192.168.10.1 (admin) 192.168.1.X 192.168.XXX.YYY

CONFIGURACIÓN AULAS
SWITCHES GESTIONABLES TL-SG2424



VLAN Config

VLAN Create

VLAN ID: (2-4094) Create

Name: (16 characters maximum)

VLAN Table

VLAN ID Select

Select	VLAN ID	Name	Untagged Ports	Tagged Ports	Operation
☑	1	Default VLAN	1-23	24	Delete
☐	11	profesores	1	24	Delete
☐	208	alumnos208	2-23	24	Delete

VLAN Membership

VLAN ID 1 VLAN Name Default VLAN

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Untagged	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Tagged	○	○	○	○	○	○	○	○	○	○	○	○	○	○
NotMember	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PVID	11	208	208	208	208	208	208	208	208	208	208	208	208	208
LAG	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Port	15	16	17	18	19	20	21	22	23	24
Untagged	◉	◉	◉	◉	◉	◉	◉	◉	◉	○
Tagged	○	○	○	○	○	○	○	○	○	◉
NotMember	○	○	○	○	○	○	○	○	○	○
PVID	208	208	208	208	208	208	208	208	208	1
LAG	---	---	---	---	---	---	---	---	---	---

CONFIGURACIÓN AULAS
SWITCHES GESTIONABLES TL-SG2424

VLAN Config

Select	VLAN ID	Name	Untagged Ports	Tagged Ports	Operation
☐	1	Default VLAN	1-24		Delete
☑	11	profesores	1	24	Delete
☐	208	alumnos208	2-23	24	Delete

VLAN Membership

VLAN ID 11 VLAN Name profesores

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Untagged	◉	○	○	○	○	○	○	○	○	○	○	○	○	○
Tagged	○	○	○	○	○	○	○	○	○	○	○	○	○	○
NotMember	○	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
PVID	11 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼
LAG	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Port	15	16	17	18	19	20	21	22	23	24
Untagged	○	○	○	○	○	○	○	○	○	○
Tagged	○	○	○	○	○	○	○	○	○	◉
NotMember	◉	◉	◉	◉	◉	◉	◉	◉	◉	○
PVID	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	1 ▼
LAG	---	---	---	---	---	---	---	---	---	---

CONFIGURACIÓN AULAS
SWITCHES GESTIONABLES TL-SG2424

VLAN Config

Select	VLAN ID	Name	Untagged Ports	Tagged Ports	Operation
☐	1	Default VLAN	1-24		Delete
☐	11	profesores	1	24	Delete
☑	208	alumnos208	2-23	24	Delete

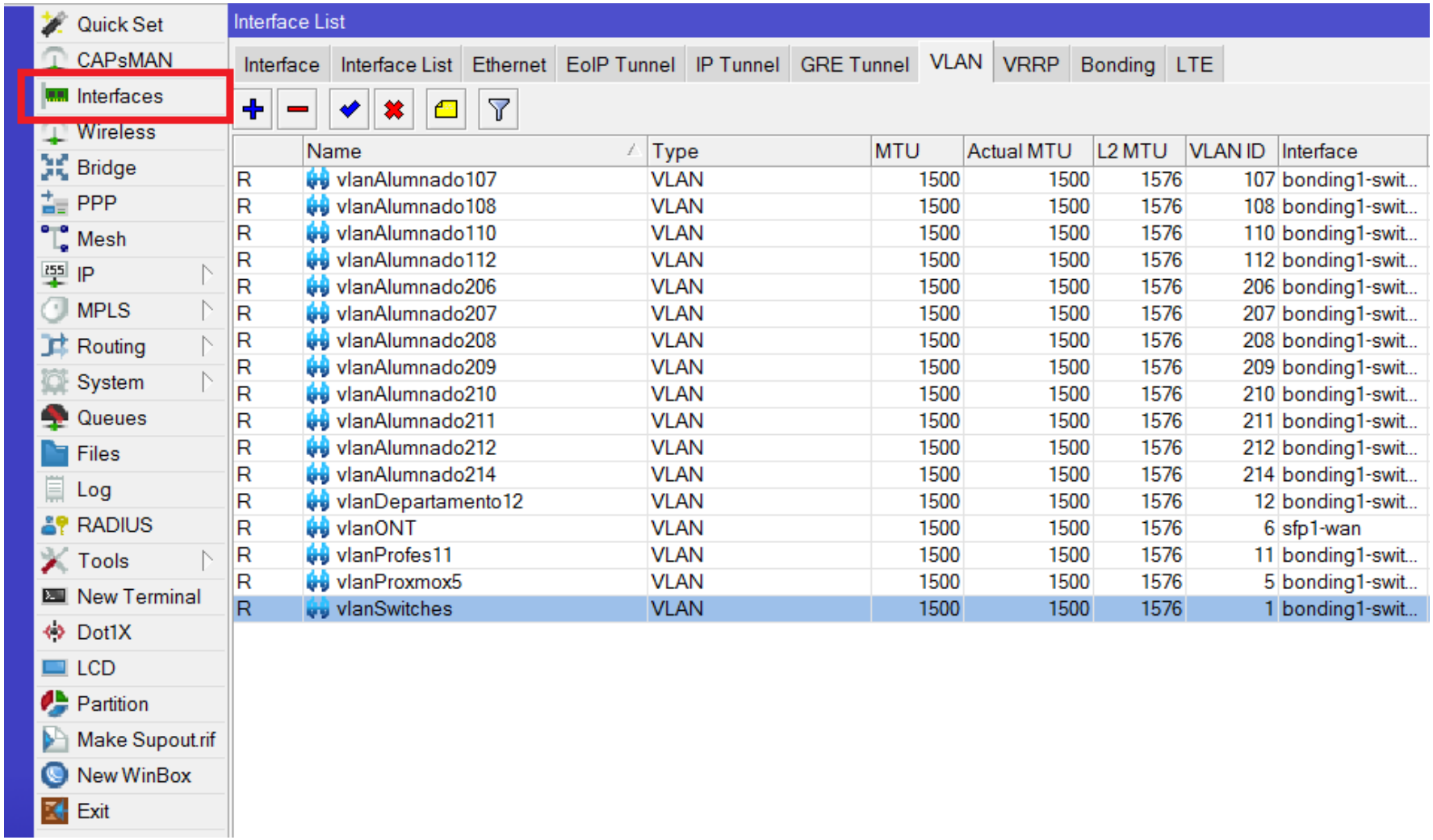
VLAN Membership

VLAN ID: 208 VLAN Name: alumnos208

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Untagged	○	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Tagged	○	○	○	○	○	○	○	○	○	○	○	○	○	○
NotMember	◉	○	○	○	○	○	○	○	○	○	○	○	○	○
PVID	11 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼
LAG	---	---	---	---	---	---	---	---	---	---	---	---	---	---

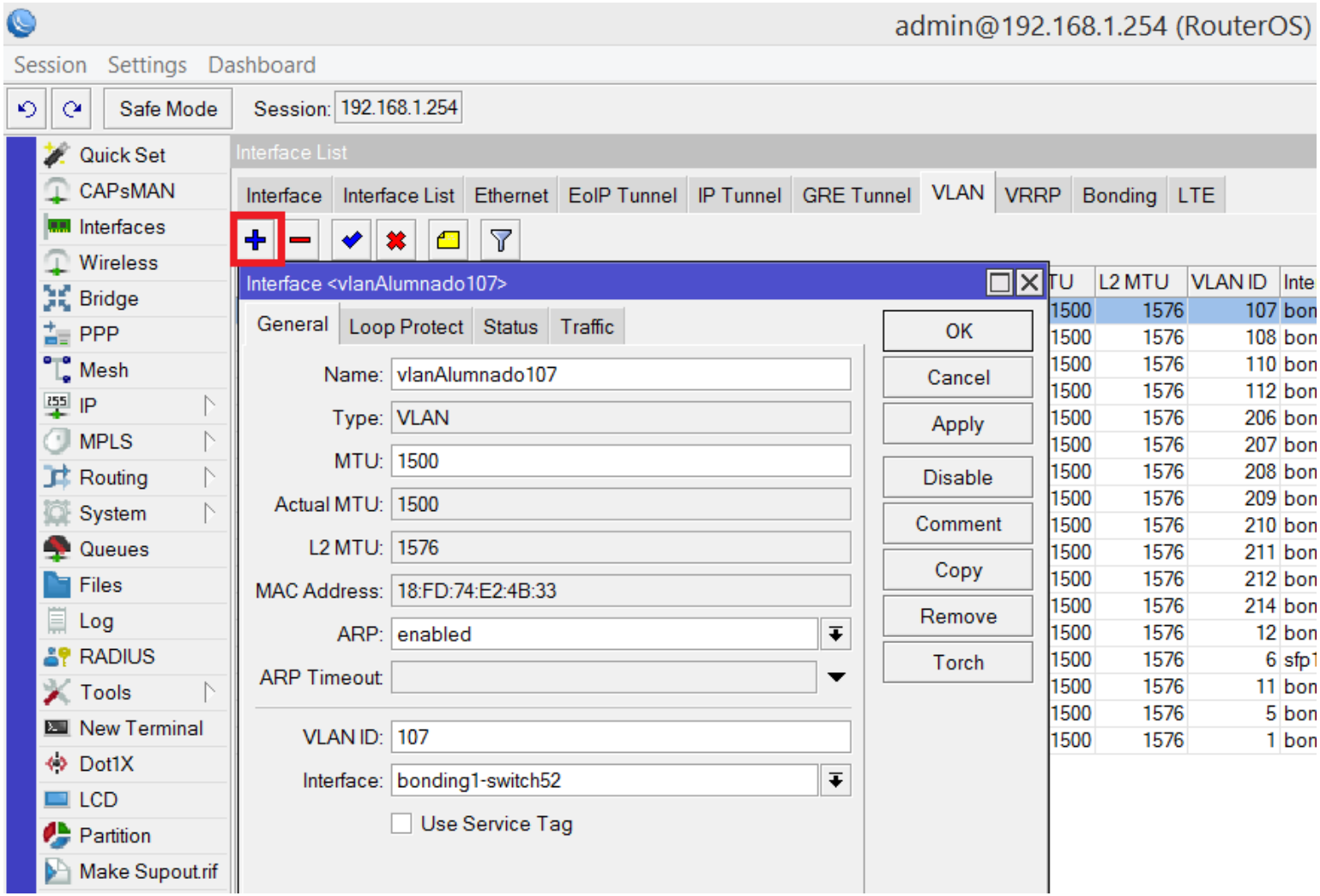
Port	15	16	17	18	19	20	21	22	23	24
Untagged	◉	◉	◉	◉	◉	◉	◉	◉	◉	○
Tagged	○	○	○	○	○	○	○	○	○	◉
NotMember	○	○	○	○	○	○	○	○	○	○
PVID	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	208 ▼	1 ▼
LAG	---	---	---	---	---	---	---	---	---	---

CONFIGURACIÓN VLANS



	Name	Type	MTU	Actual MTU	L2 MTU	VLAN ID	Interface
R	vlanAlumnado107	VLAN	1500	1500	1576	107	bonding1-swit...
R	vlanAlumnado108	VLAN	1500	1500	1576	108	bonding1-swit...
R	vlanAlumnado110	VLAN	1500	1500	1576	110	bonding1-swit...
R	vlanAlumnado112	VLAN	1500	1500	1576	112	bonding1-swit...
R	vlanAlumnado206	VLAN	1500	1500	1576	206	bonding1-swit...
R	vlanAlumnado207	VLAN	1500	1500	1576	207	bonding1-swit...
R	vlanAlumnado208	VLAN	1500	1500	1576	208	bonding1-swit...
R	vlanAlumnado209	VLAN	1500	1500	1576	209	bonding1-swit...
R	vlanAlumnado210	VLAN	1500	1500	1576	210	bonding1-swit...
R	vlanAlumnado211	VLAN	1500	1500	1576	211	bonding1-swit...
R	vlanAlumnado212	VLAN	1500	1500	1576	212	bonding1-swit...
R	vlanAlumnado214	VLAN	1500	1500	1576	214	bonding1-swit...
R	vlanDepartamento12	VLAN	1500	1500	1576	12	bonding1-swit...
R	vlanONT	VLAN	1500	1500	1576	6	sfp1-wan
R	vlanProfes11	VLAN	1500	1500	1576	11	bonding1-swit...
R	vlanProxmox5	VLAN	1500	1500	1576	5	bonding1-swit...
R	vlanSwitches	VLAN	1500	1500	1576	1	bonding1-swit...

CONFIGURACIÓN VLANS



CONFIGURACIÓN VLANS

PUERTO	DESCRIPCION	RED	DIRECCIÓN	INTERFACE
1	WAN – Salida a Internet	80.58.67.86	80.28.211.131	pppoe-movistar
2	Red del Departamento	192.168.2.0/24	192.168.2.254	vlanDepertamento12
3	Red TIC - Andared	192.168.0.0/22	192.168.3.51	ether3-andared
bonding 9,10,11,12	Red de Profesores – Equipos Aulas	192.168.1.0/24	192.168.1.254	vlanAlumnos11
bonding 9,10,11,12	Aula 107	192.168.107.0/24	192.168.107.X	vlanAlumnos107
		192.168.1.0/24	192.168.1.X	vlanAlumnos107
		192.168.0.0/24	192.168.0.107	vlanSwitches
bonding 9,10,11,12	Aula 108	192.168.108.0/24	192.168.108.X	vlanAlumnos108
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.108	vlanSwitches
bonding 9,10,11,12	Aula 110	192.168.110.0/24	192.168.110.X	vlanAlumnos108
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.110	vlanSwitches
bonding 9,10,11,12	Aula 206	192.168.206.0/24	192.168.206.X	vlanAlumnos206
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.108	vlanSwitches
bonding 9,10,11,12	Aula 207	192.168.207.0/24	192.168.207.X	vlanAlumnos207
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.207	vlanSwitches

CONFIGURACIÓN VLANS

PUERTO	DESCRIPCION	RED	DIRECCIÓN	INTERFACE
bonding 9,10,11,12	Aula 208	192.168.208.0/24	192.168.208.X	vlanAlumnos208
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.208	vlanSwitches
bonding 9,10,11,12	Aula 209	192.168.209.0/24	192.168.209.X	vlanAlumnos209
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.209	vlanSwitches
bonding 9,10,11,12	Aula 210	192.168.210.0/24	192.168.210.X	vlanAlumnos210
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.210	vlanSwitches
bonding 9,10,11,12	Aula 211	192.168.211.0/24	192.168.211.X	vlanAlumnos211
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.211	vlanSwitches
bonding 9,10,11,12	Aula 212	192.168.212.0/24	192.168.212.X	vlanAlumnos212
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.212	vlanSwitches
bonding 9,10,11,12	Aula 214	192.168.214.0/24	192.168.214.X	vlanAlumnos214
		192.168.1.0/24	192.168.1.X	vlanAlumnos11
		192.168.0.0/24	192.168.0.212	vlanSwitches

CONFIGURACIÓN VLANS

DETALLE DE CONFIGURACIÓN

/interface vlan

add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos107** vlan-id=107
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos108** vlan-id=108
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos110** vlan-id=110
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos206** vlan-id=206
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos207** vlan-id=207
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos208** vlan-id=208
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos209** vlan-id=209
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos210** vlan-id=210
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos211** vlan-id=211
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos212** vlan-id=214
add interface=bonding1-switch52 l2mtu=1576 name=**vlanAlumnos214** vlan-id=214

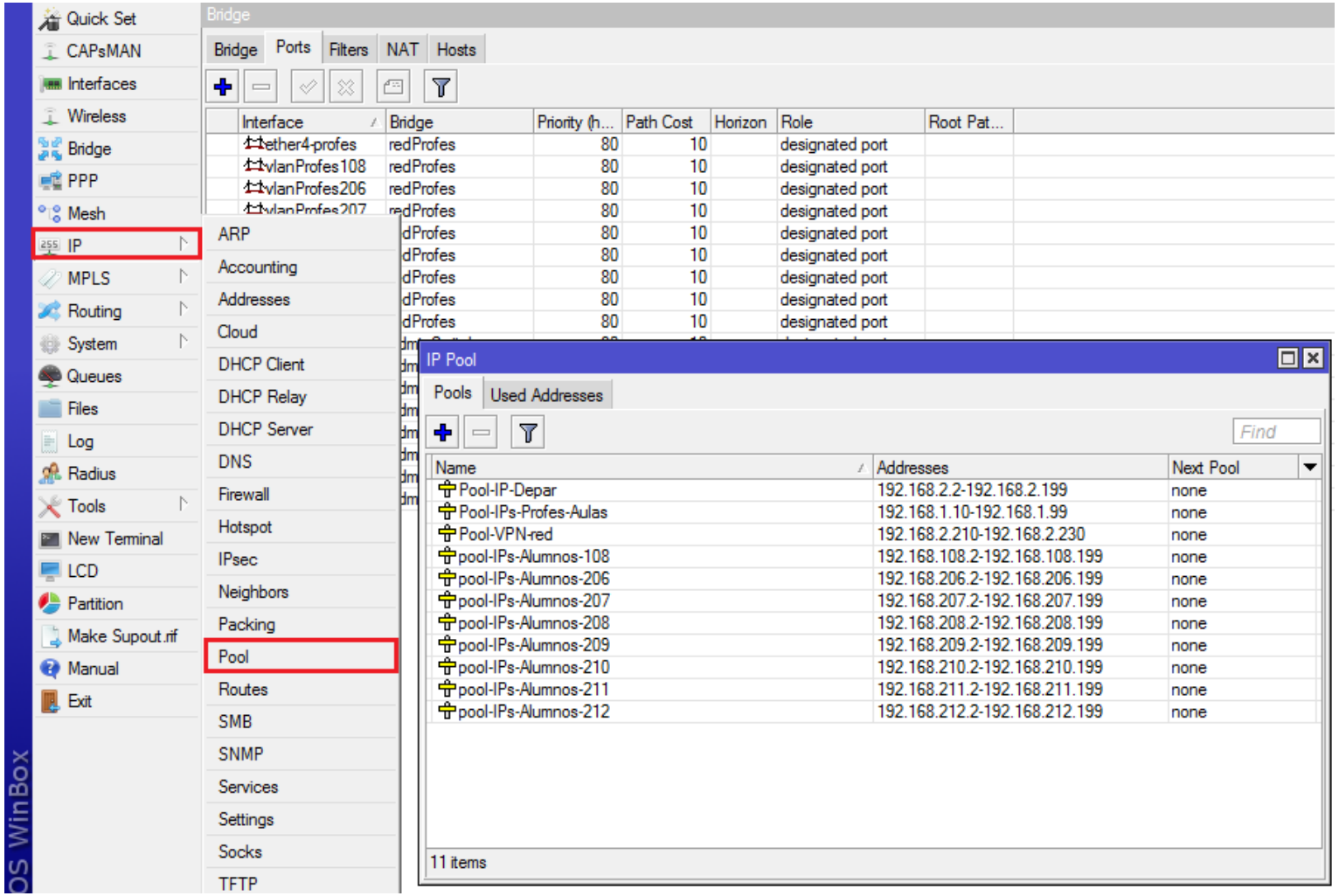
add interface=bonding1-switch52 name=**vlanDepartamento12** vlan-id=12
add interface=bonding1-switch52 name=**vlanProfes11** vlan-id=11
add interface=bonding1-switch52 name=**vlanProxmox5** vlan-id=5
add interface=bonding1-switch52 name=**vlanSwitches** vlan-id=1

CONFIGURACIÓN DHCP

RED	DESCRIPCION	RANGO IPS	GATEWAY	INTERFACE
192.168.1.0/24	Red de Profesores	192.168.1.2-99	192.168.1.254	vlanProfes
192.168.2.0/24	Red del Departamento	192.168.2.2-199	192.168.2.254	vlanDepar
192.168.100.0/24	Red Equipo Directivo	192.168.100.2-199	192.168.100.254	ether2
192.168.107.0/24	Aula 107	192.168.107.2-199	192.168.107.254	vlanAlumnos107
192.168.108.0/24	Aula 108	192.168.108.2-199	192.168.108.254	vlanAlumnos108
192.168.110.0/24	Aula 110	192.168.110.2-199	192.168.110.254	vlanAlumnos110
192.168.206.0/24	Aula 206	192.168.206.2-199	192.168.206.254	vlanAlumnos206
192.168.207.0/24	Aula 207	192.168.207.2-199	192.168.207.254	vlanAlumnos207
192.168.208.0/24	Aula 208	192.168.208.2-199	192.168.208.254	vlanAlumnos208
192.168.209.0/24	Aula 209	192.168.209.2-199	192.168.209.254	vlanAlumnos209
192.168.210.0/24	Aula 210	192.168.210.2-199	192.168.210.254	vlanAlumnos210
192.168.211.0/24	Aula 211	192.168.211.2-199	192.168.211.254	vlanAlumnos211
192.168.212.0/24	Aula 212	192.168.212.2-199	192.168.212.254	vlanAlumnos212
192.168.214.0/24	Aula 214	192.168.214.2-199	192.168.214.254	vlanAlumnos214

Otros Parámetros	Valor
DNS	192.168.5.2 (Adguard Docker)
	80.58.61.250 (Telefónica)
	80.58.61.254 (Telefónica)
Domain	18700098.18.andared.ced.junta-andalucia.es

CONFIGURACIÓN POOLS IP

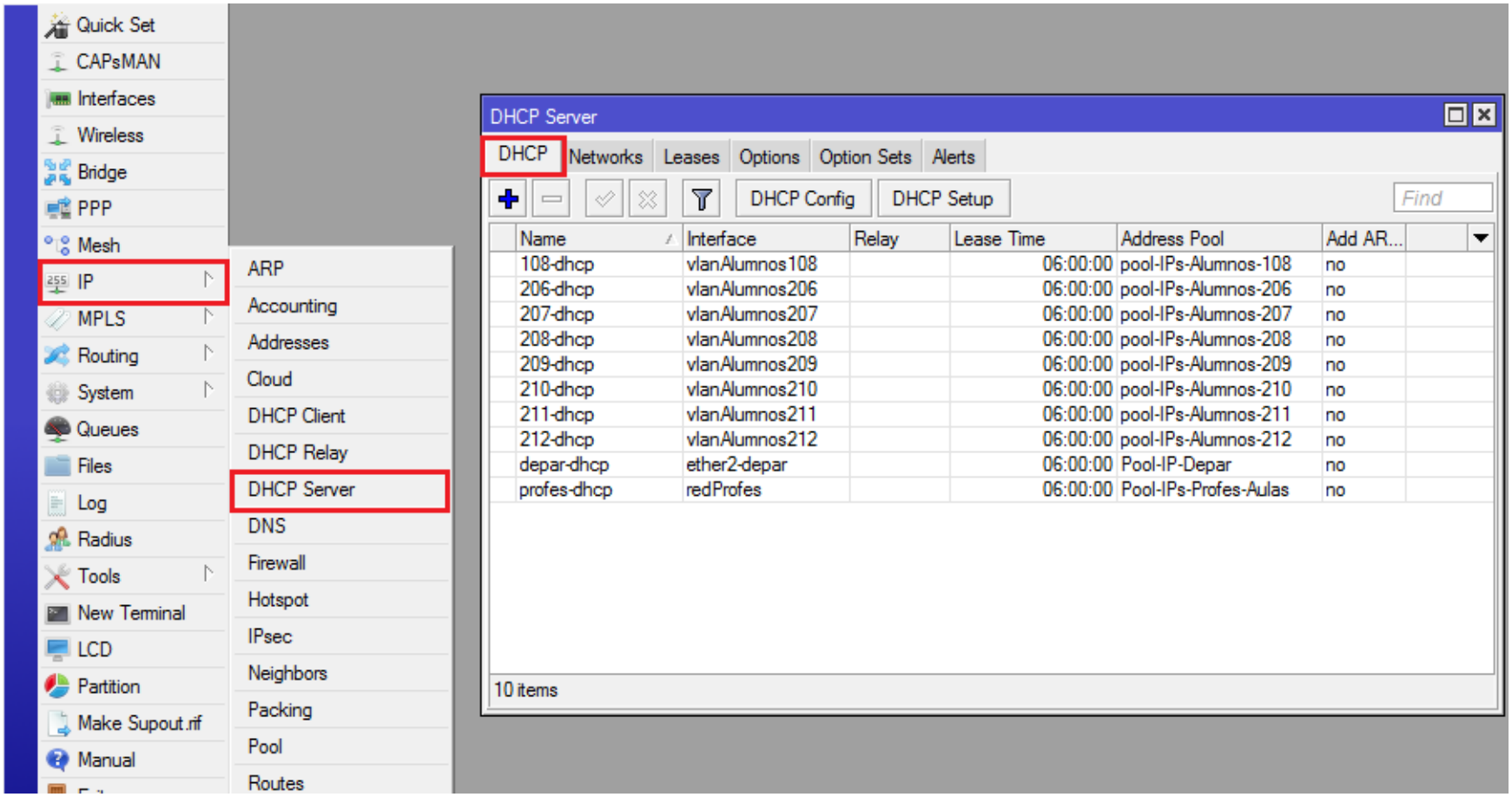


CONFIGURACIÓN POOLS IP

DETALLE DE CONFIGURACIÓN

```
/ip pool
add name=Pool-IP-Depar ranges=192.168.2.2-192.168.2.199
add name=Pool-IPs-Profes-Aulas ranges=192.168.1.10-192.168.1.99
add name=pool-IPs-Alumnos-108 ranges=192.168.108.2-192.168.108.199
add name=pool-IPs-Alumnos-206 ranges=192.168.206.2-192.168.206.199
add name=pool-IPs-Alumnos-209 ranges=192.168.209.2-192.168.209.199
add name=pool-IPs-Alumnos-210 ranges=192.168.210.2-192.168.210.199
add name=pool-IPs-Alumnos-211 ranges=192.168.211.2-192.168.211.199
add name=pool-IPs-Alumnos-212 ranges=192.168.212.2-192.168.212.199
add name=pool-IPs-Alumnos-207 ranges=192.168.207.2-192.168.207.199
add name=pool-IPs-Alumnos-208 ranges=192.168.208.2-192.168.208.199
```

CONFIGURACIÓN SERVICIO DHCP

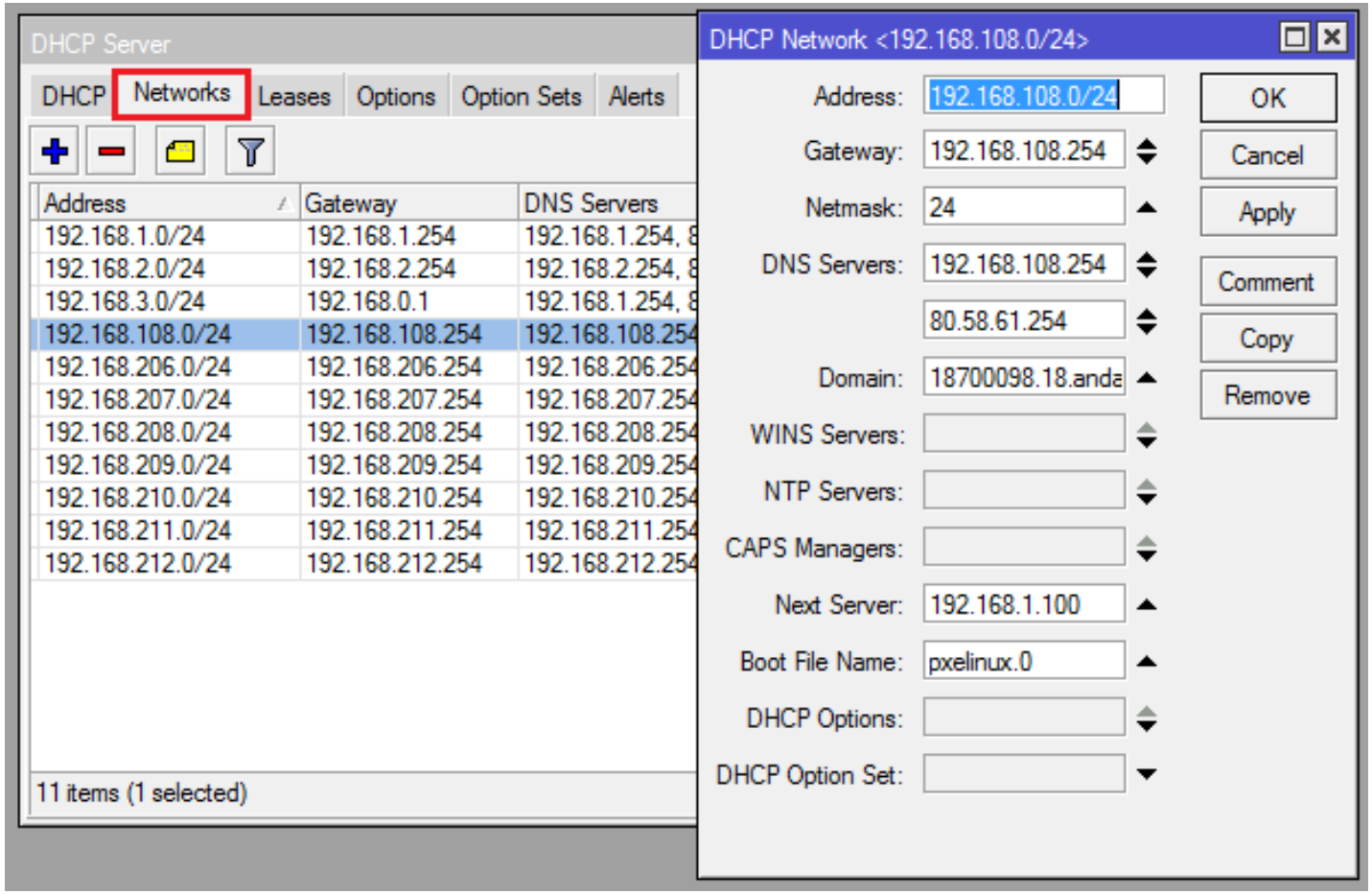


CONFIGURACIÓN SERVICIO DHCP

DETALLE DE CONFIGURACIÓN

```
/ip dhcp-server
add address-pool=Pool-IP-Depar disabled=no interface=ether2-depar lease-time=\
    6h name=depar-dhcp
add address-pool=Pool-IPs-Profes-Aulas disabled=no interface=redProfes \
    lease-time=6h name=profes-dhcp
add address-pool=pool-IPs-Alumnos-108 disabled=no interface=vlanAlumnos108 \
    lease-time=6h name=108-dhcp
add address-pool=pool-IPs-Alumnos-209 disabled=no interface=vlanAlumnos209 \
    lease-time=6h name=209-dhcp
add address-pool=pool-IPs-Alumnos-210 disabled=no interface=vlanAlumnos210 \
    lease-time=6h name=210-dhcp
add address-pool=pool-IPs-Alumnos-211 disabled=no interface=vlanAlumnos211 \
    lease-time=6h name=211-dhcp
add address-pool=pool-IPs-Alumnos-212 disabled=no interface=vlanAlumnos212 \
    lease-time=6h name=212-dhcp
add address-pool=pool-IPs-Alumnos-206 disabled=no interface=vlanAlumnos206 \
    lease-time=6h name=206-dhcp
add address-pool=pool-IPs-Alumnos-207 disabled=no interface=vlanAlumnos207 \
    lease-time=6h name=207-dhcp
add address-pool=pool-IPs-Alumnos-208 disabled=no interface=vlanAlumnos208 \
    lease-time=6h name=208-dhcp
```

CONFIGURACIÓN REDES DHCP



CONFIGURACIÓN REDES DHCP

DETALLE DE CONFIGURACIÓN

/ip dhcp-server network

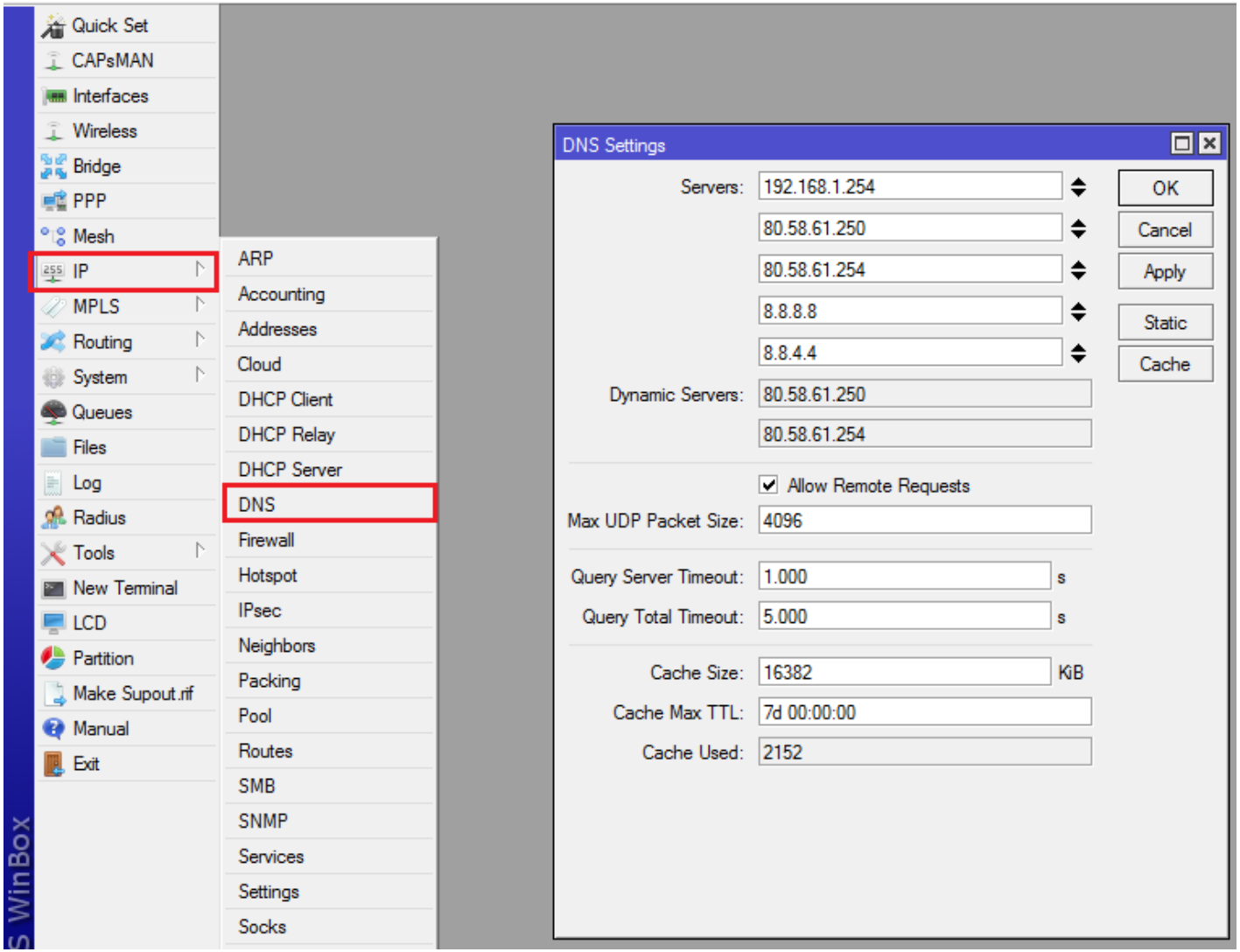
```
add address=192.168.1.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.1.254,80.58.61.254,8.8.8.8 domain=\
    ieszaidinvergeles.org gateway=192.168.1.254 netmask=\
    24 next-server=192.168.1.100
add address=192.168.2.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.2.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.2.254 netmask=\
    24 next-server=192.168.1.100
add address=192.168.3.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.1.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.0.1 netmask=22 \
    next-server=192.168.1.100
add address=192.168.108.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.108.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.108.254 \
    netmask=24 next-server=192.168.1.100
add address=192.168.206.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.206.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.206.254 \
    netmask=24 next-server=192.168.1.100
```

CONFIGURACIÓN REDES DHCP

DETALLE DE CONFIGURACIÓN

```
/ip dhcp-server network
add address=192.168.207.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.207.254,80.58.61.250 domain=\
    ieszaidinvergeles.org gateway=192.168.207.254 \
    netmask=24 next-server=192.168.1.100
add address=192.168.208.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.208.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.208.254 \
    netmask=24 next-server=192.168.1.100
add address=192.168.209.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.209.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.209.254 \
    netmask=24 next-server=192.168.1.100
add address=192.168.210.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.210.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.210.254 \
    netmask=24 next-server=192.168.1.100
add address=192.168.211.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.211.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.211.254 \
    netmask=24 next-server=192.168.1.100
add address=192.168.212.0/24 boot-file-name=pxelinux.0 dns-server=\
    192.168.212.254,80.58.61.254 domain=\
    ieszaidinvergeles.org gateway=192.168.212.254 \
    netmask=24 next-server=192.168.1.100
```

CONFIGURACIÓN DNS-CACHE



CONFIGURACIÓN DNS-CACHE

DETALLE DE CONFIGURACIÓN

/ip dns

```
set allow-remote-requests=yes cache-size=16382KiB query-server-timeout=1s \
    query-total-timeout=5s servers=\
    192.168.1.254,80.58.61.250,80.58.61.254,8.8.8.8,8.8.4.4
```

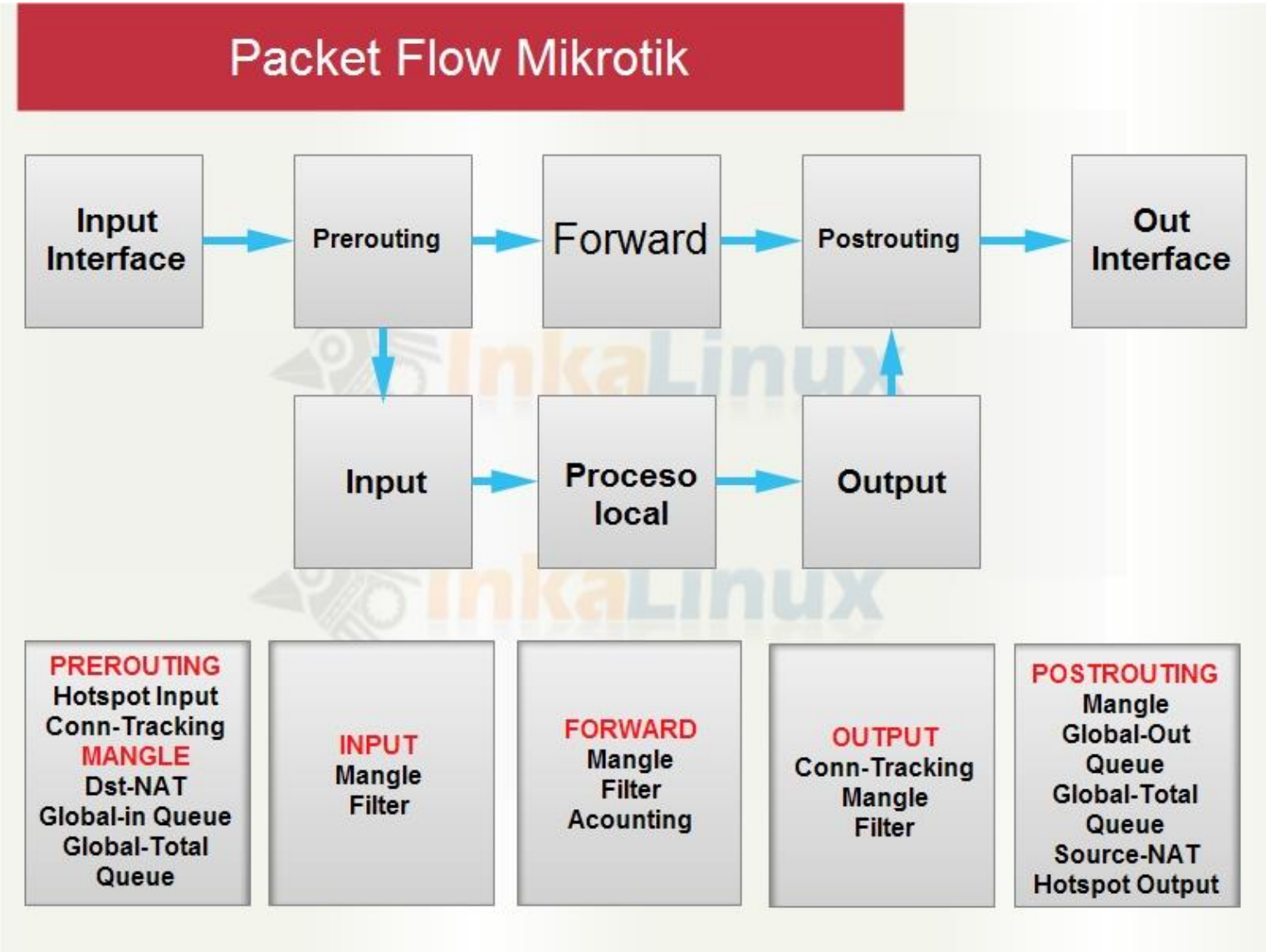
/ip dns static

```
add address=192.168.1.100 name="informatica.ieszaidinvergeles.org.18700098.18.\
    andared.ced.junta-andalucia.es"
add address=192.168.1.100 name=\
    diskstation.18700098.18.andared.ced.junta-andalucia.es
add address=192.168.0.2 name=c0.18700098.18.andared.ced.junta-andalucia.es
add address=192.168.1.1 name=\
    webserver.18700098.18.andared.ced.junta-andalucia.es
```

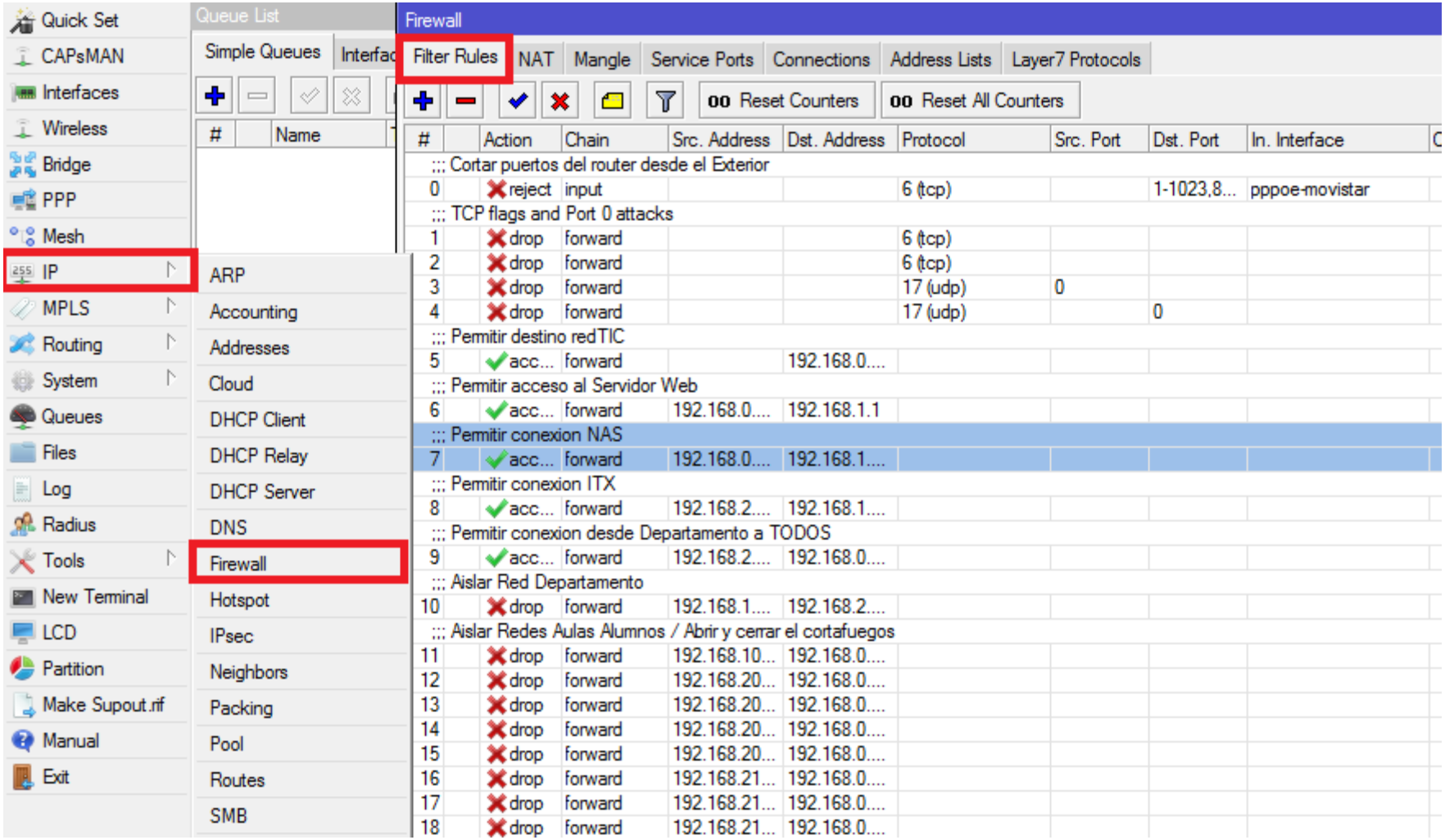
/ip firewall nat

```
add action=redirect chain=dstnat comment=“Redirigir a DNS  Cache" dst-port=53 protocol=\
    udp to-ports=53
```

CONFIGURACIÓN DEL FIREWALL



CONFIGURACIÓN DEL FIREWALL
REGLAS FILTER



CONFIGURACIÓN DEL FIREWALL REGLAS FILTER

DETALLE DE CONFIGURACIÓN

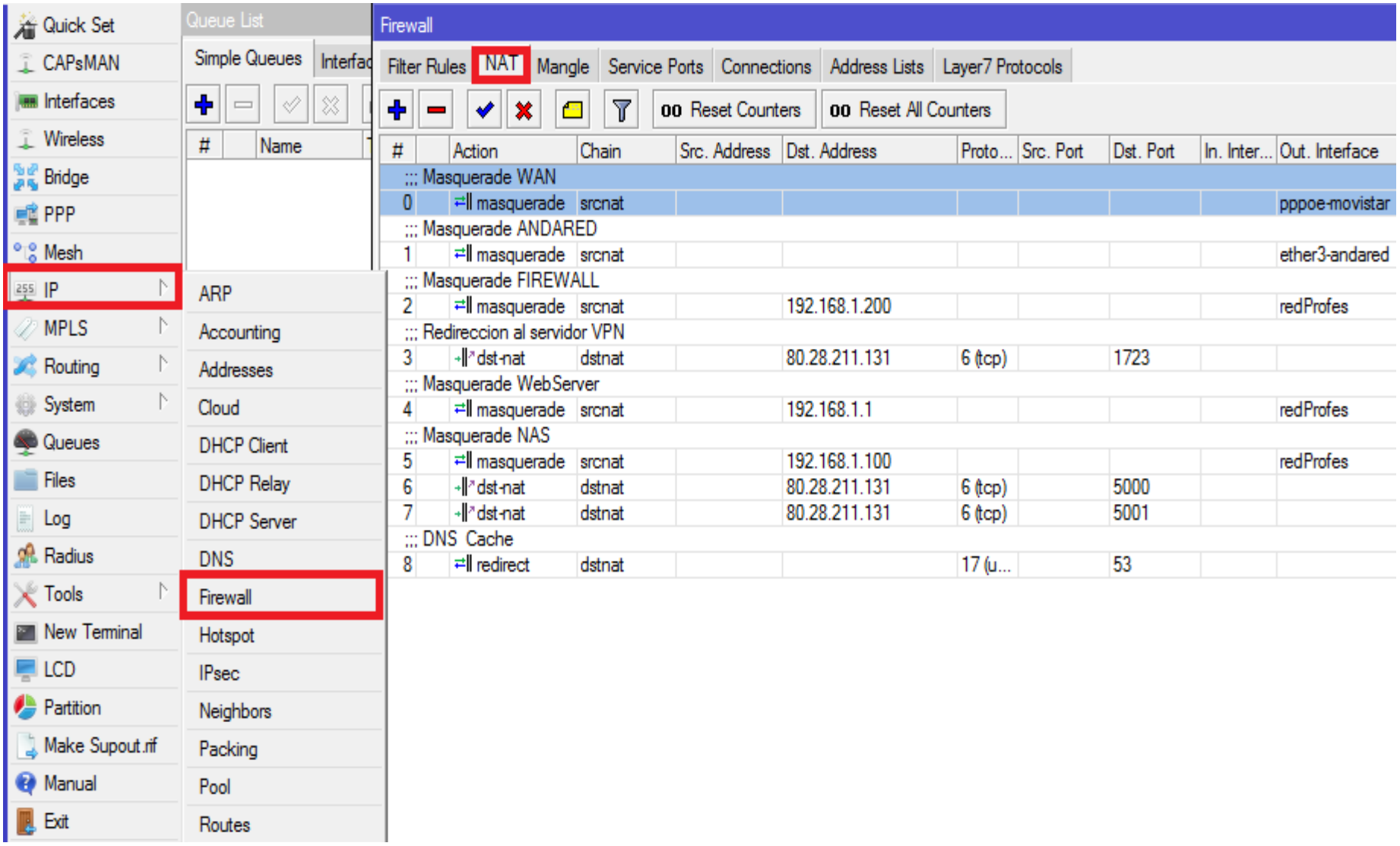
```
/ip firewall filter
add action=reject chain=input comment="Cortar puertos Exterior" dst-port=1-1023,8291 \
    in-interface=pppoe-movistar protocol=tcp reject-with=icmp-port-unreachable
add action=drop chain=forward comment="TCP flags and Port 0 attacks" \
    protocol=tcp tcp-flags=fin,!ack
add action=drop chain=forward protocol=tcp tcp-flags=fin,urg
add action=drop chain=forward protocol=udp src-port=0
add action=drop chain=forward dst-port=0 protocol=udp
add chain=forward comment="Permitir destino redTIC" dst-address=\
    192.168.0.0/24
add chain=forward comment="Permitir acceso al Servidor Web" dst-address=\
    192.168.1.1 src-address=192.168.0.0/16
add chain=forward comment="Permitir conexion NAS" dst-address=192.168.1.100 \
    src-address=192.168.0.0/16
add chain=forward comment="Permitir conexion ITX" dst-address=192.168.1.200 \
    src-address=192.168.2.0/24
add chain=forward comment="Permitir conexion desde Departamento a TODOS" \
    dst-address=192.168.0.0/16 src-address=192.168.2.0/24
add action=drop chain=forward comment="Aislar Red Departamento" \
    connection-state=new dst-address=192.168.2.0/24 src-address=\
    192.168.1.0/24 src-address-list=!192.168.1.100
add action=drop chain=forward comment="Aislar Redes Aulas Alumnos" \
    connection-state=new dst-address=192.168.0.0/16 src-address=192.168.108.0/24
```

CONFIGURACIÓN DEL FIREWALL REGLAS FILTER

DETALLE DE CONFIGURACIÓN

```
/ip firewall filter
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.206.0/24
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.207.0/24
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.208.0/24
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.209.0/24
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.210.0/24
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.211.0/24
add action=drop chain=forward connection-state=new dst-address=192.168.0.0/16 \
    src-address=192.168.212.0/24
add action=drop chain=forward comment=108 src-address=192.168.108.0/24
add action=drop chain=forward comment=206 src-address=192.168.206.0/24
add action=drop chain=forward comment=207 src-address=192.168.207.0/24
add action=drop chain=forward comment=208 disabled=yes src-address=\
    192.168.208.0/24
add action=drop chain=forward comment=209 src-address=192.168.209.0/24
add action=drop chain=forward comment=210 disabled=yes src-address=192.168.210.0/24
add action=drop chain=forward comment=211 disabled=yes src-address=192.168.211.0/24
add action=drop chain=forward comment=212 src-address=192.168.212.0/24
```

CONFIGURACIÓN DEL FIREWALL
REGLAS NAT

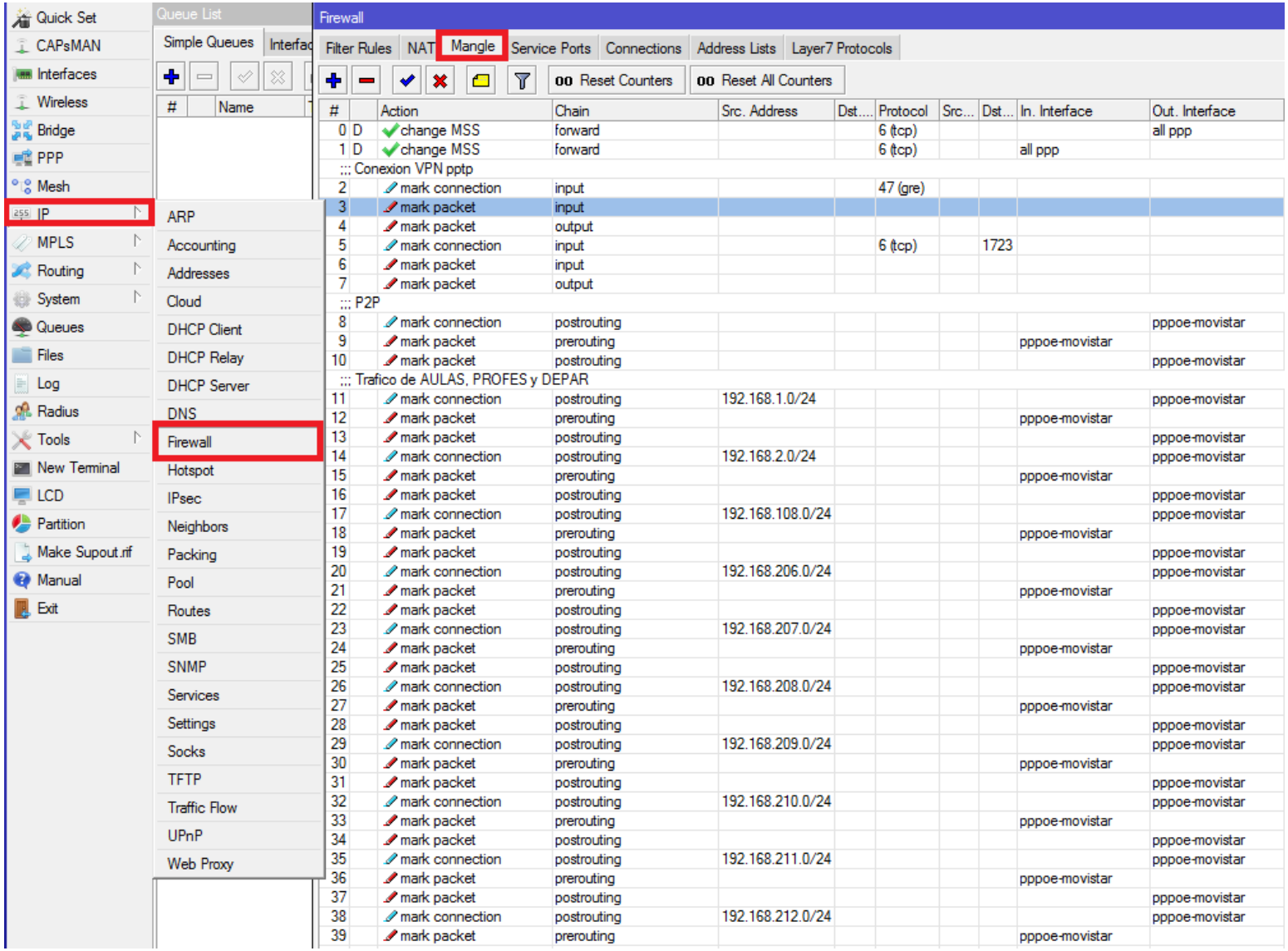


CONFIGURACIÓN DEL FIREWALL REGLAS NAT

DETALLE DE CONFIGURACIÓN

```
/ip firewall nat
add action=masquerade chain=srcnat comment="Masquerade WAN" out-interface=\
    pppoe-movistar
add action=masquerade chain=srcnat comment="Masquerade ANDARED" \
    out-interface=ether3-andared
add action=masquerade chain=srcnat comment="Masquerade FIREWALL" dst-address=\
    192.168.1.200 out-interface=redProfes
add action=dst-nat chain=dstnat comment="Redireccion al servidor VPN" \
    dst-address=80.28.211.131 dst-port=1723 protocol=tcp to-addresses=\
    192.168.2.254
add action=masquerade chain=srcnat comment="Masquerade WebServer" \
    dst-address=192.168.1.1 dst-address-list=192.168.1.1 out-interface=\
    redProfes
add action=masquerade chain=srcnat comment="Masquerade NAS" dst-address=\
    192.168.1.100 out-interface=redProfes
add action=dst-nat chain=dstnat dst-address=80.28.211.131 dst-port=5000 \
    protocol=tcp to-addresses=192.168.1.100 to-ports=5000
add action=dst-nat chain=dstnat dst-address=80.28.211.131 dst-port=5001 \
    protocol=tcp to-addresses=192.168.1.100 to-ports=5001
add action=redirect chain=dstnat comment="DNS  Cache" dst-port=53 protocol=\
    udp to-ports=53
```

CONFIGURACIÓN DEL FIREWALL
REGLAS MANGLE



CONFIGURACIÓN DEL FIREWALL
REGLAS MANGLE

Ejemplo de Marcados de Conexiones y Paquetes de Entrada/Salida

```
/ip firewall mangle
add action=mark-connection chain=postrouting comment=\
    “Conexiones  nuevas desde de la red de profes" connection-state=new \
    new-connection-mark=redprofes out-interface=pppoe-movistar src-address=\
    192.168.1.0/24
add action=mark-packet chain=prerouting connection-mark=redprofes \
    in-interface=pppoe-movistar new-packet-mark=profes_in passthrough=no
add action=mark-packet chain=postrouting connection-mark=redprofes \
    new-packet-mark=profes_out out-interface=pppoe-movistar passthrough=no
```