



LTE On MikroTik

MUM Portugal
Setembro 20, 2019

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- RouterOS desde 2014
- Networks desde 2014
- Officelan 2015
- MTCNA 2015
- MTCWE / Trainer 2019 (TR0652)
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officelan



História

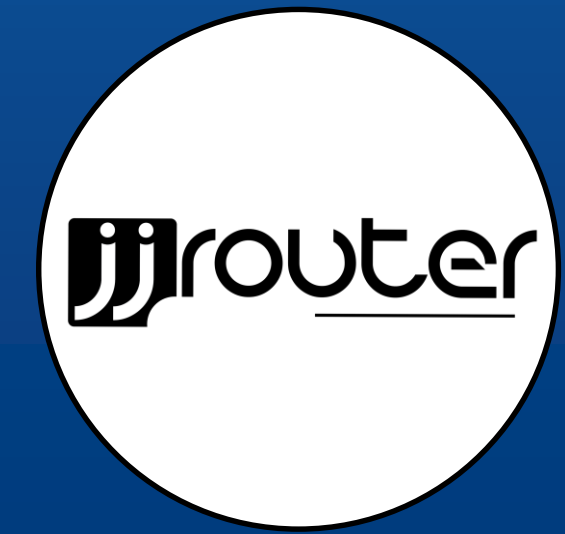
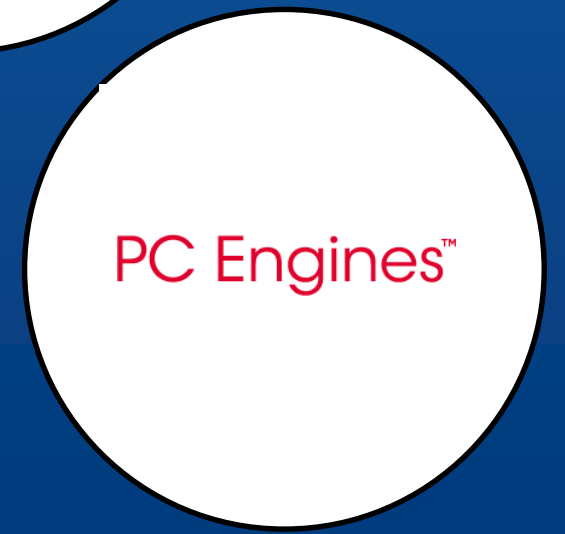
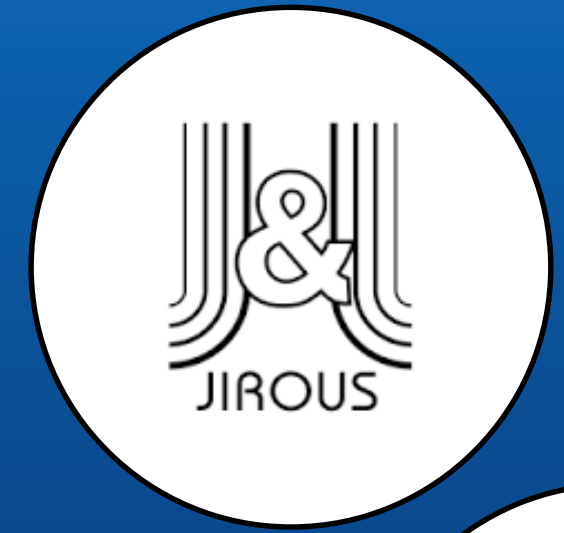
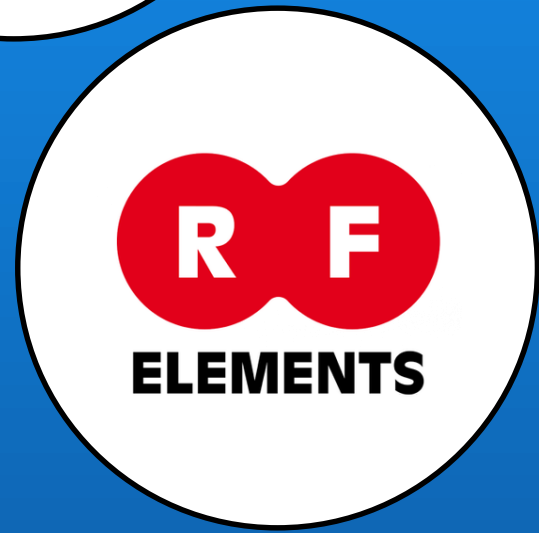


O que fazemos

- Venda e instalação de produtos e soluções de redes
- Desenho e produção de equipamentos (JJRouter)
- Projetos de redes (arquitetura, implementação e gestão)
- Formação MikroTik, Ubiquiti, Wireless e Network
- Coberturas Wifi alta densidade em eventos temporários

Parcerias

Distribuidores



VAR



Links



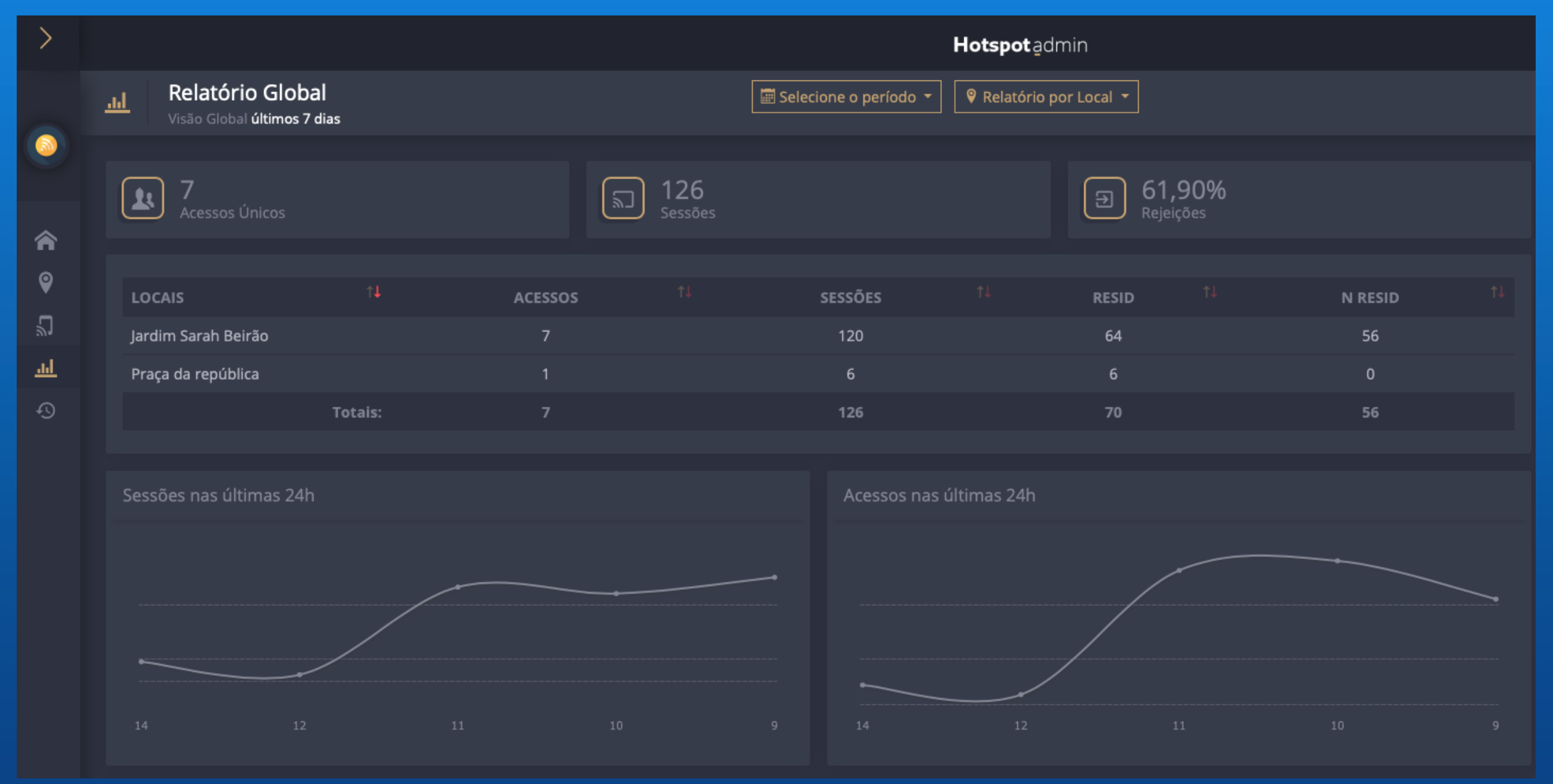
Modem 4G



Antenas Sectoriais



Router 4G



Projetos



Survey para levantamento das necessidades



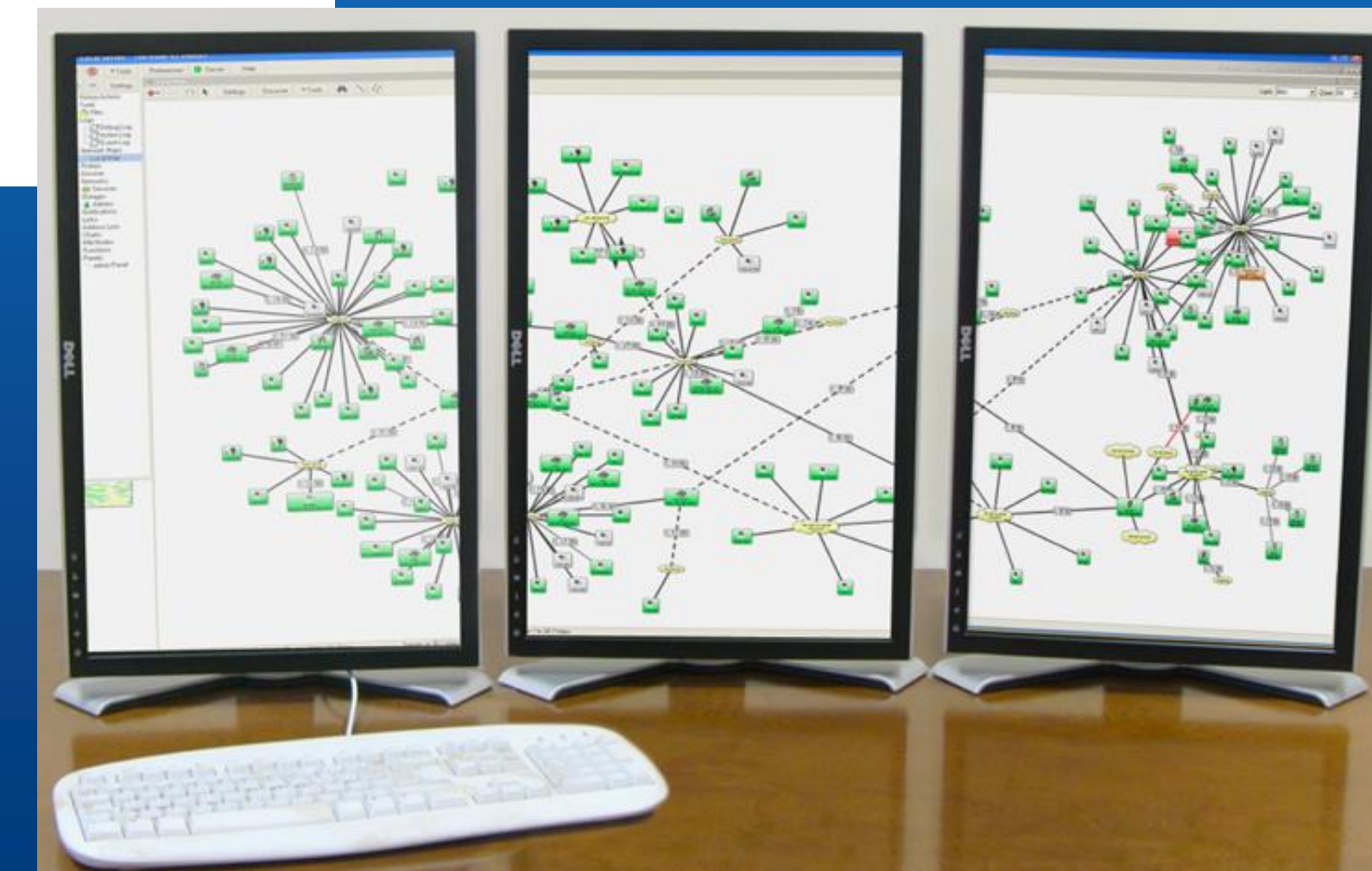
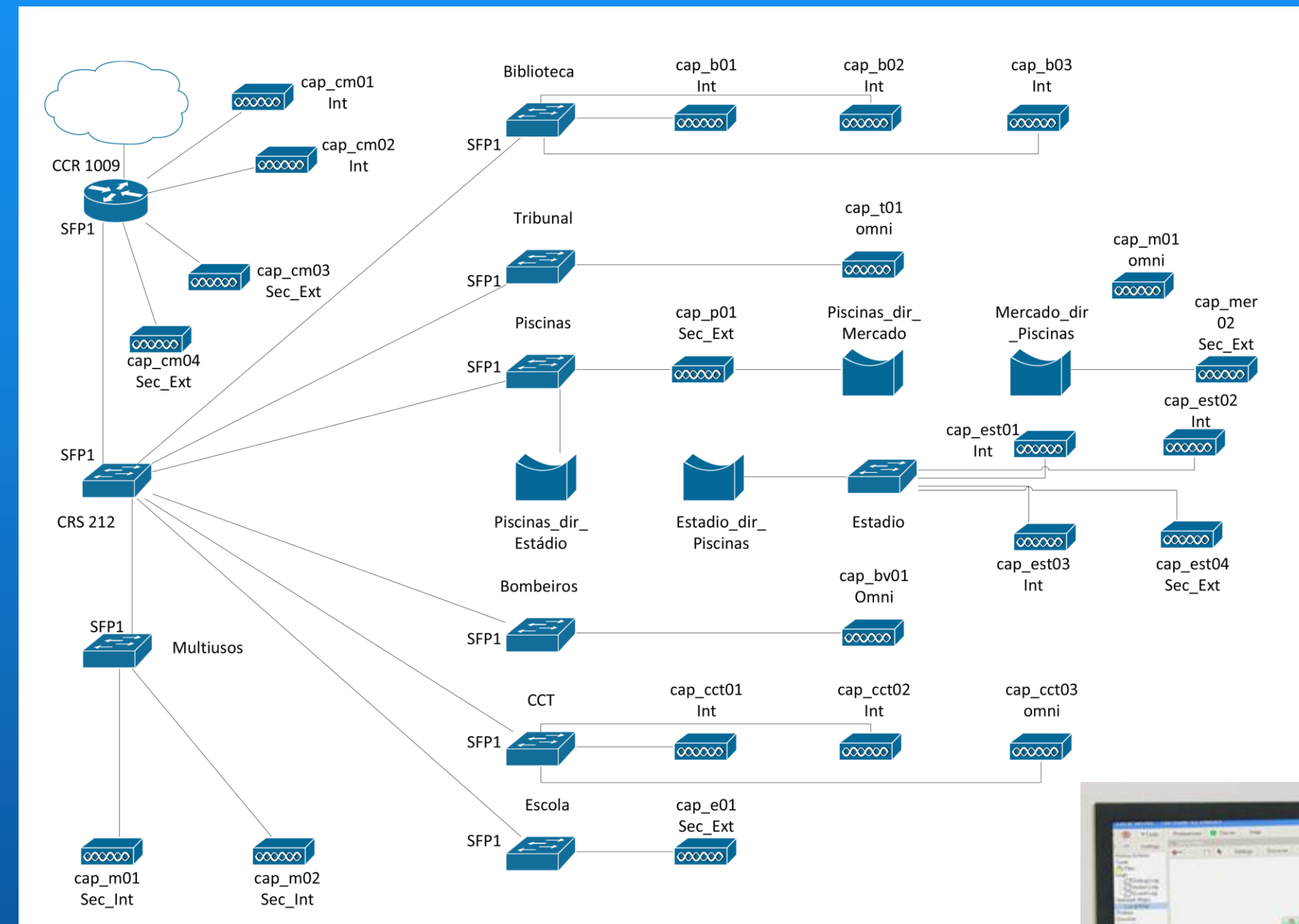
Desenho arquitetura de rede



Instalação e configuração da infraestrutura



Suporte, monitorização e manutenção técnica



Implementações

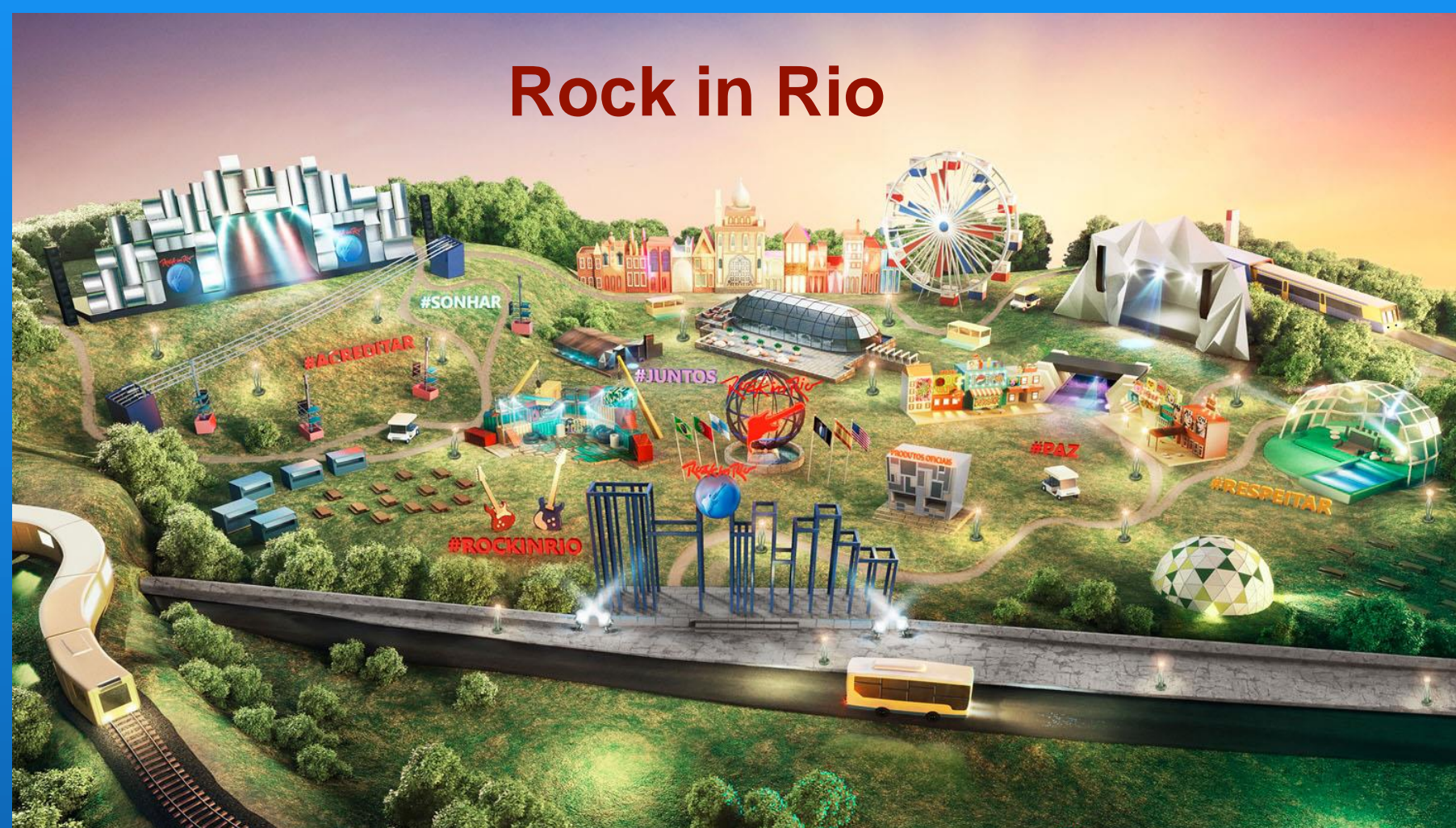
 visit Portugal

WiFi4EU

Smart City Solutions



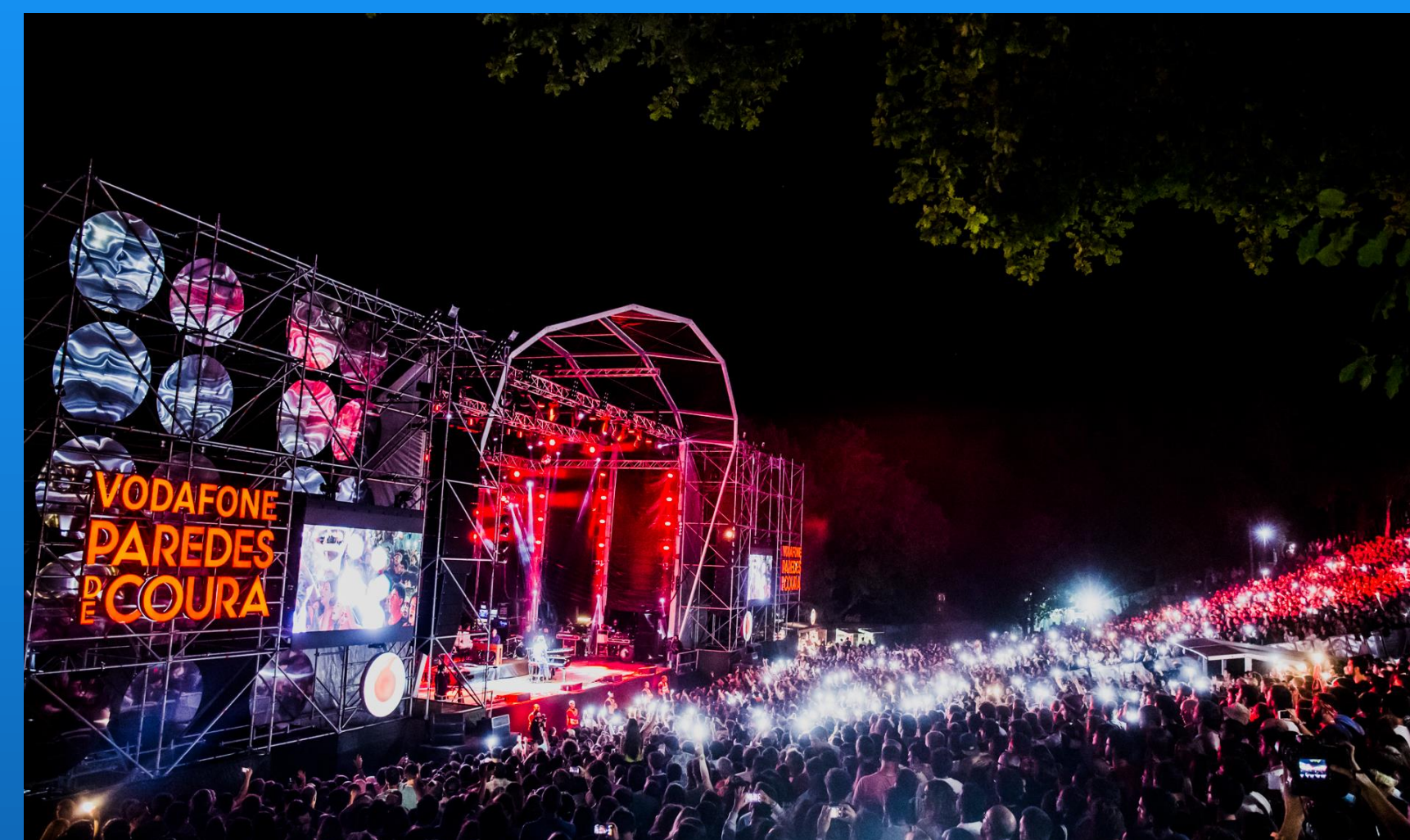
Eventos Temporários



Cobertura Wifi indoor/outdoor
de alta densidade

Transporte IP para múltiplos
sites áudio/vídeo

E MUITOS MAIS...



LTE no MikroTik

LTE

- PEN Lte / Modem USB
- Routerboard's com Modem's incorporados.



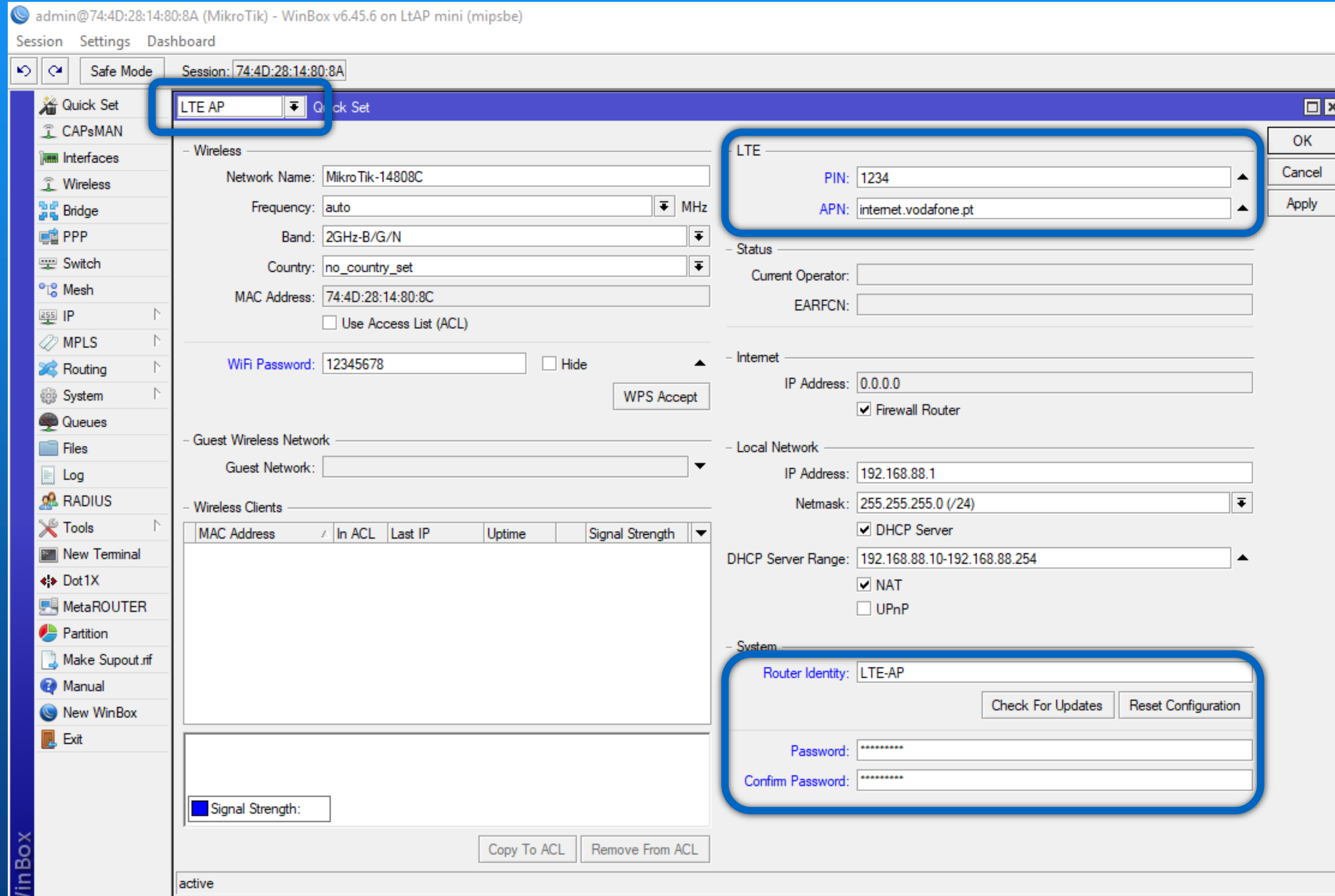
Casos Práticos

- Hotspot para veículos (p.e. LtAP mini)
- Ligação à Internet em sítios remotos (p.e. LHG LTE)
- Backup da ligação à Internet principal
- Gestão outbound

Quick Set - LTE

- Configuração rápida
- Serve para a maior parte dos casos
- LTE AP – Router LTE com Wi-fi
- LTE – Router LTE sem Wi-fi

LTE – AP Quick set



The screenshot shows the MikroTik WinBox interface for configuring an LTE AP. The window title is "admin@74:4D:28:14:80:8A (MikroTik) - WinBox v6.45.6 on LtAP mini (mipsbe)". The "Quick Set" menu is open, and "LTE AP" is selected. The configuration is divided into several sections:

- Wireless:** Network Name: MikroTik-14808C, Frequency: auto, Band: 2GHz-B/G/N, Country: no_country_set, MAC Address: 74:4D:28:14:80:8C. There is a checkbox for "Use Access List (ACL)" and a "WiFi Password" field with the value 12345678 and a "Hide" checkbox. A "WPS Accept" button is also present.
- Guest Wireless Network:** Guest Network: (empty dropdown).
- Wireless Clients:** A table with columns: MAC Address, In ACL, Last IP, Uptime, Signal Strength. The table is currently empty.
- LTE:** PIN: 1234, APN: internet.vodafone.pt. This section is highlighted with a blue box.
- Status:** Current Operator: (empty), EARFCN: (empty).
- Internet:** IP Address: 0.0.0.0, Firewall Router: .
- Local Network:** IP Address: 192.168.88.1, Netmask: 255.255.255.0 (/24), DHCP Server: , DHCP Server Range: 192.168.88.10-192.168.88.254, NAT: , UPnP: .
- System:** Router Identity: LTE-AP, Password: (masked), Confirm Password: (masked). This section is also highlighted with a blue box. It includes "Check For Updates" and "Reset Configuration" buttons.

At the bottom, there are buttons for "Copy To ACL" and "Remove From ACL", and a "Signal Strength" indicator. The status bar at the bottom left shows "active".

LTE Quick set

LTE Quick Set

- LTE -

Band: 1 3 7 20 8 2 38 40

PIN:

APN:

- Status -

Current Operator:

EARFCN:

SINR:

- Internet -

IP Address:

Firewall Router

- Local Network -

IP Address:

Netmask:

DHCP Server

DHCP Server Range:

NAT

UPnP

- VPN -

VPN Access

VPN Address:

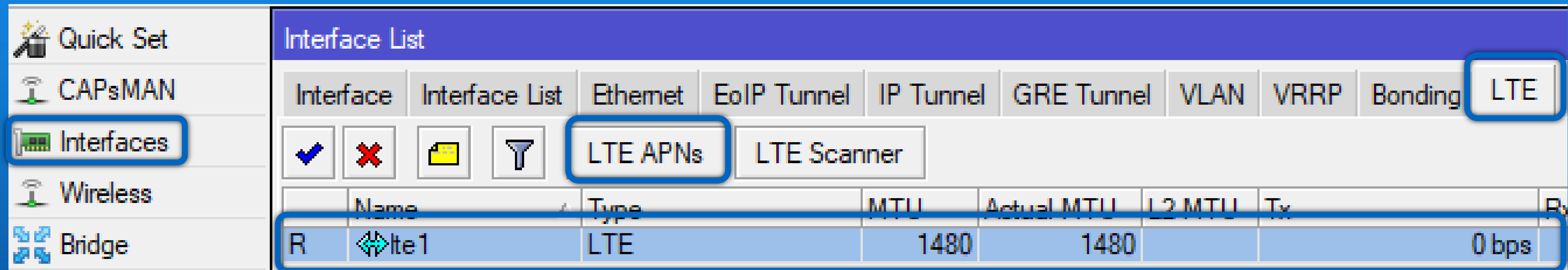
- System -

Router Identity:

Password:

Confirm Password:

Interface LTE



The screenshot shows a network configuration interface with a sidebar on the left and a main panel on the right. The sidebar contains the following items: Quick Set, CAPsMAN, Interfaces (highlighted with a blue box), Wireless, and Bridge. The main panel is titled "Interface List" and has several tabs: Interface, Interface List, Ethernet, EoIP Tunnel, IP Tunnel, GRE Tunnel, VLAN, VRRP, Bonding, and LTE (highlighted with a blue box). Below the tabs are two buttons: "LTE APNs" (highlighted with a blue box) and "LTE Scanner". A table below the buttons shows the configuration for the LTE interface:

	Name	Type	MTU	Actual MTU	L2 MTU	Tx	Rx
R	lte1	LTE	1480	1480		0 bps	

LTE APN

LTE APN <default>

Name:

APN:

IP Type: ▾

Use Peer DNS

Add Default Route

Default Route Distance:

IPv6 Interface: ▾

Authentication: ▾

Passthrough Interface: ▾

OK

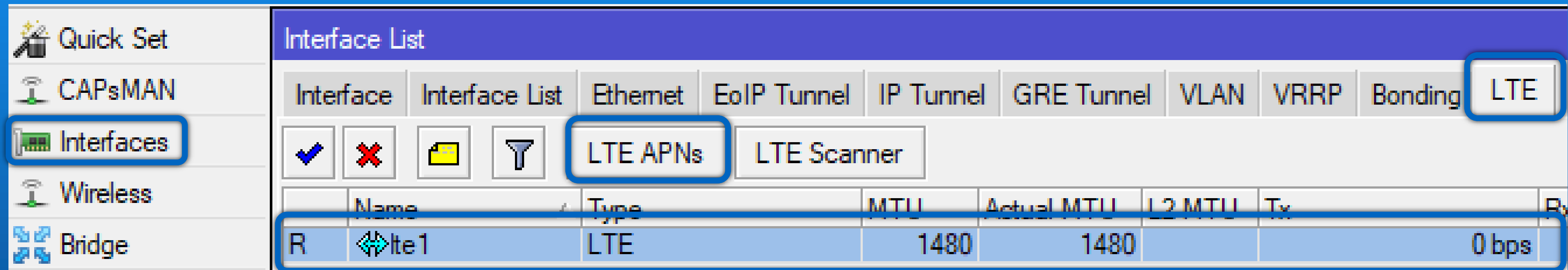
Cancel

Apply

Copy

Remove

Interface LTE



The screenshot shows a network configuration interface with a sidebar on the left and a main panel on the right. The sidebar contains the following items: Quick Set, CAPsMAN, Interfaces (highlighted with a blue box), Wireless, and Bridge. The main panel is titled "Interface List" and has several tabs: Interface, Interface List, Ethernet, EoIP Tunnel, IP Tunnel, GRE Tunnel, VLAN, VRRP, Bonding, and LTE (highlighted with a blue box). Below the tabs are two buttons: "LTE APNs" (highlighted with a blue box) and "LTE Scanner". A table below the buttons lists the interface configuration:

	Name	Type	MTU	Actual MTU	L2 MTU	Tx	Rx
R	lte1	LTE	1480	1480		0 bps	

LTE Status

Interface <lte1>

General Cellular Status Traffic

Current Operator:

LAC:

Current Cell ID:

eNB ID:

Sector ID:

PHY Cell ID:

Access Technology:

IMEI:

IMSI:

UICC:

EARFCN:

Session Uptime:

RSRP:

RSRQ:

SINR:

OK
Cancel
Apply
Disable
Comment
Torch
Scan...

enabled running slave

LTE Passthrough

LTE Passthrough

LTE APN <vodafone>

Name:

APN:

IP Type: ▾

Use Peer DNS

Add Default Route

Default Route Distance:

IPv6 Interface: ▾

Authentication: ▾

Passthrough Interface: ▾

Passthr. MAC Address:

Passthr. Subnet Selection: ▾

OK
Cancel
Apply
Copy
Remove

LTE Passthrough

```
/interface lte apn
```

```
add apn=internet.vodafone.pt default-route-distance=1  
name=vodafone passthrough-interface=ether1 passthrough-  
mac=auto
```

```
/interface lte
```

```
set [ find ] apn-profiles=vodafone mtu=1500 name=wwan
```


LTE Passthrough com Vlan's

Interface List

Interface Interface List Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VRRP Bonding LTE

+ - ✓ ✗ [icon] [icon] Detect Internet

	Name	Type	Actual MTU	L2 MTU	Tx	Rx
R	ether1	Ethernet	1500	1598	42.4 kbps	4.0 kbps
R	eth1.q306	VLAN	1500	1594	0 bps	0 bps
R	eth1.q69	VLAN	1500	1594	0 bps	0 bps
X	wlan1	Wireless (Atheros AR9...)	1500	1600	0 bps	0 bps
	wwan	LTE	1500		0 bps	0 bps

5 items

LTE Passthrough com Vlan's

LTE APN <vodafone>

Name:

APN:

IP Type: ▾

Use Peer DNS

Add Default Route

Default Route Distance:

IPv6 Interface: ▾

Authentication: ▾

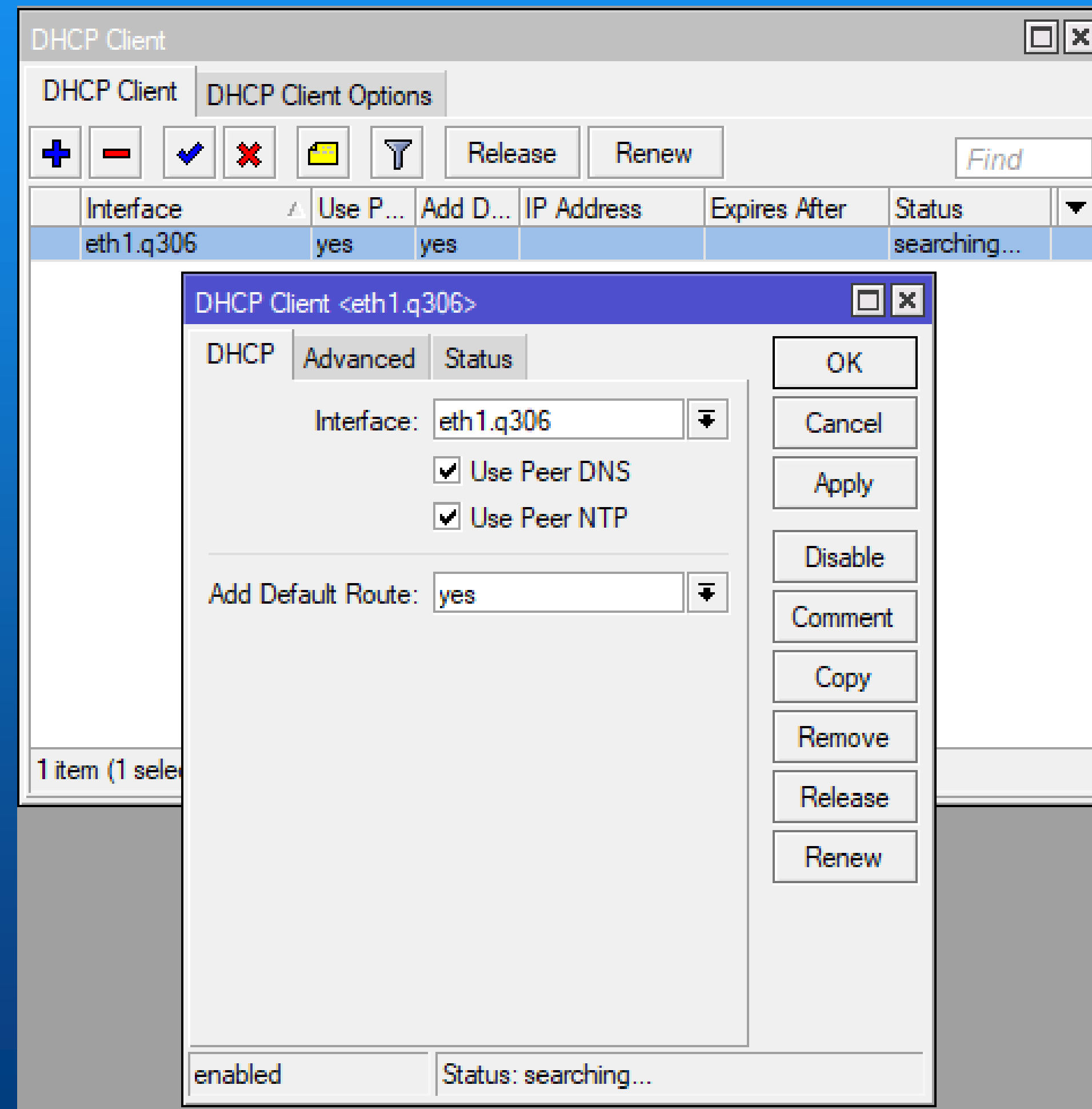
Passthrough Interface: ▾

Passth. MAC Address:

Passth. Subnet Selection: ▾

OK
Cancel
Apply
Copy
Remove

LTE Passthrough com vlan's

A screenshot of a DHCP Client configuration window. The main window is titled "DHCP Client" and has two tabs: "DHCP Client" and "DHCP Client Options". Below the tabs is a toolbar with icons for adding, removing, enabling, and disabling, along with buttons for "Release" and "Renew", and a "Find" search box. A table below the toolbar shows the configuration for the selected interface "eth1.q306".

Interface	Use P...	Add D...	IP Address	Expires After	Status
eth1.q306	yes	yes			searching...

Below the table is a smaller window titled "DHCP Client <eth1.q306>". This window has three tabs: "DHCP", "Advanced", and "Status". The "DHCP" tab is active. It contains the following settings:

- Interface: eth1.q306 (dropdown menu)
- Use Peer DNS
- Use Peer NTP
- Add Default Route: yes (dropdown menu)

On the right side of this window is a vertical stack of buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove, Release, and Renew. At the bottom of the window, there are two status indicators: "enabled" and "Status: searching...".

LTE Passthrough

/interface vlan

```
add interface=ether1 name=eth1.q306 vlan-id=306
```

```
add interface=ether1 name=eth1.q69 vlan-id=69
```

/interface lte apn

```
add apn=internet.vodafone.pt default-route-distance=1
```

```
name=vodafone passthrough-interface=eth1.q69
```

```
passthrough-mac=auto
```

/ip dhcp-client

```
add dhcp-options=hostname,clientid disabled=no
```

```
interface=eth1.q306
```

LTE Passthrough com Multiplos APN's

Interface List

Interface | Interface List | Ethernet | EoIP Tunnel | IP Tunnel | GRE Tunnel | VLAN | VRRP | Bonding | LTE

+ - ✓ ✗ [icon] [icon] Detect Internet

	Name	Type	Actual MTU	L2 MTU	Tx	Rx
::: defconf						
R	bridge	Bridge	1500	1598	56.3 kbps	
RS	ether1	Ethernet	1500	1598	56.6 kbps	
R	eth1.q101	VLAN	1500	1594	0 bps	
R	eth1.q102	VLAN	1500	1594	0 bps	
S	wlan1	Wireless (Atheros AR9...)	1500	1600	0 bps	
	wwan	LTE	1480		0 bps	

LTE Passthrough com Multiplos APN's

LTE APN <netfixa>

Name:

APN:

IP Type:

Use Peer DNS

Add Default Route

Default Route Distance:

IPv6 Interface:

Authentication:

Passthrough Interface:

Passthr. MAC Address:

OK
Cancel
Apply
Copy
Remove

LTE APN <vozfixa>

Name:

APN:

IP Type:

Use Peer DNS

Add Default Route

Default Route Distance:

IPv6 Interface:

Authentication:

Passthrough Interface:

Passthr. MAC Address:

OK
Cancel
Apply
Copy
Remove

LTE Passthrough com Multiplos APN's

The screenshot shows the 'Interface <wwan>' configuration window with the following fields and values:

- Name: wwan
- Type: LTE
- MTU: 1480
- Actual MTU: 1480
- L2 MTU: (empty)
- MAC Address: AC:FF:FF:00:00:00
- Network Mode: GSM 3G LTE
- Bands: (empty)
- PIN: (empty)
- Modem Init: (empty)
- APN Profile: netfixa (highlighted with a blue box)
- APN Profile: vozfixa
- Allow Roaming
- Manufacturer: "MikroTik"
- Model: "R11e-LTE"
- Revision: "MikroTik_CP_2.160.000_v008"

Buttons on the right side: OK, Cancel, Apply, Disable, Comment, Torch, Scan...

Bottom status bar: enabled | running | slave

LTE Passthrough com Múltiplos APN's

```
/interface lte
```

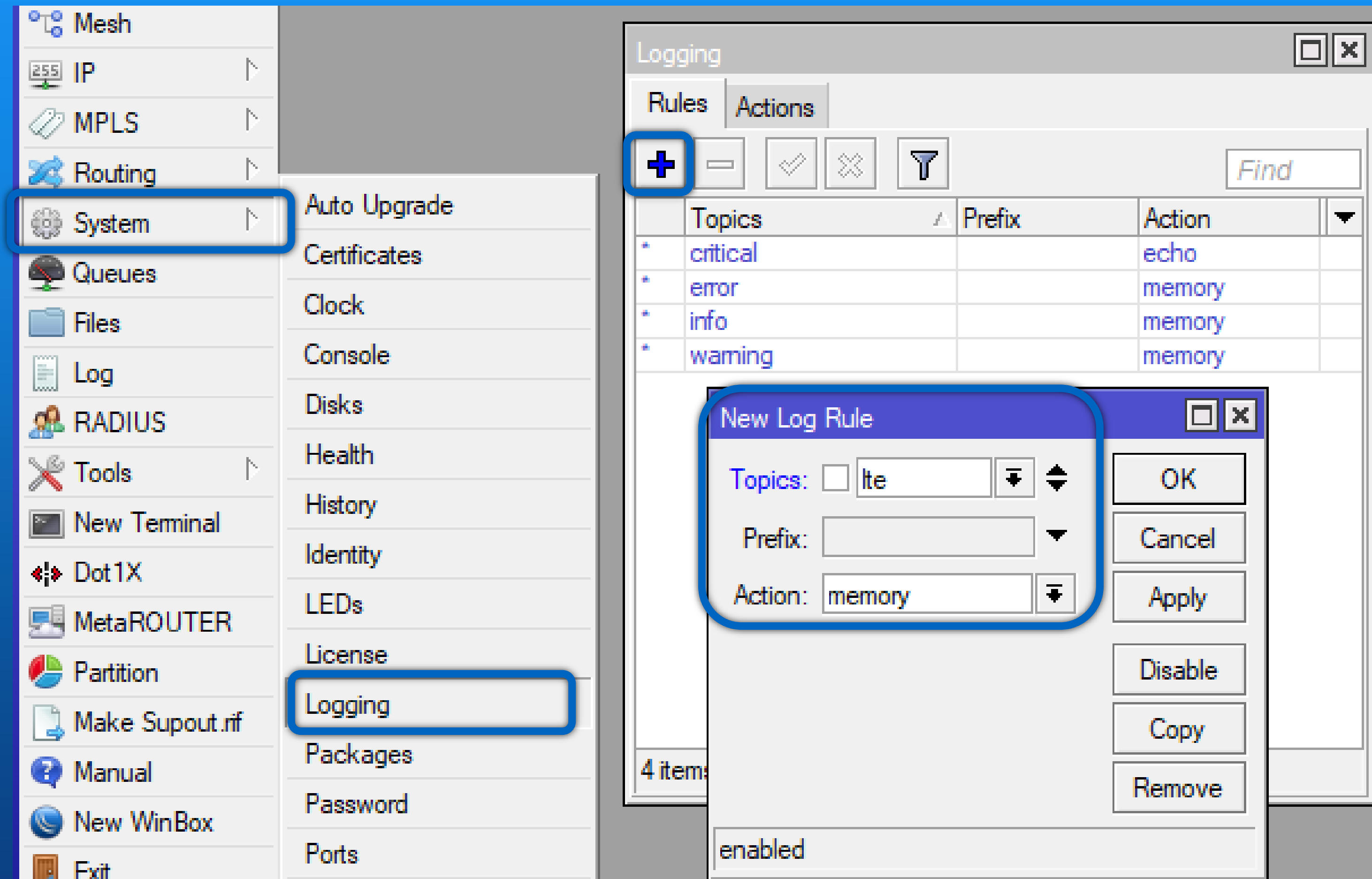
```
set [ find ] apn-profiles=netfixa,vozfixa mac-  
address=AC:FF:FF:00:00:00 name=wwan
```

```
/interface lte apn
```

```
add apn=internetfixa.vodafone.pt default-route-distance=1  
name=netfixa passthrough-interface=eth1.q101 passthrough-  
mac=auto
```

```
add apn=vozfixa.vodafone.pt default-route-distance=1 name=vozfixa  
passthrough-interface=eth1.q102 passthrough-mac=auto
```

Logging



The screenshot shows a network management interface with a sidebar on the left and a main content area on the right. The sidebar contains a tree view with the following items: Mesh, IP, MPLS, Routing, System (highlighted with a blue box), Queues, Files, Log, RADIUS, Tools, New Terminal, Dot1X, MetaROUTER, Partition, Make Supout.rif, Manual, New WinBox, and Exit. The main content area shows a list of system components: Auto Upgrade, Certificates, Clock, Console, Disks, Health, History, Identity, LEDs, License, Logging (highlighted with a blue box), Packages, Password, and Ports. A 'Logging' dialog box is open, showing a table of logging rules. The dialog has two tabs: 'Rules' and 'Actions'. The 'Rules' tab is active, showing a table with columns: Topics, Prefix, and Action. The table contains four rows: critical, error, info, and warning, all with the action 'memory'. A blue box highlights the '+' icon in the top left of the dialog. A 'New Log Rule' dialog box is also open, showing fields for Topics (with a dropdown menu), Prefix (with a dropdown menu), and Action (with a dropdown menu). The 'Action' field is set to 'memory'. The 'New Log Rule' dialog has buttons for OK, Cancel, Apply, Disable, Copy, and Remove. The 'Logging' dialog also has a 'Find' search box and a '4 items' indicator at the bottom left.

Topics	Prefix	Action
* critical		echo
* error		memory
* info		memory
* warning		memory

New Log Rule

Topics: lte

Prefix:

Action: memory

OK

Cancel

Apply

Disable

Copy

Remove

enabled

Contactos

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BOA MuM