

Configuración inicial router MikroTik para hogar y pequeña empresa

JANUARY 20
MUMHONDURAS

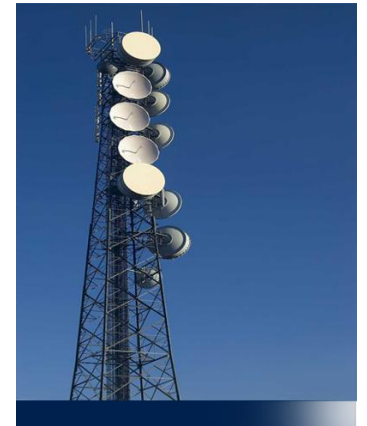
MIKROTIK USER MEETING • SAN PEDRO SULA 2020

MikroTik

MikroTik

Sobre el expositor

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Universidad Santo Tomás sede Medellín-
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- Experiencia con Mikrotik desde el año 2008
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Introducción

Hoy en día, muchas personas buscan para los hogares, colegios, empresas, etc., tener una red Wi-Fi, controlar la velocidad, tener una red segura, poder establecer una VPN para acceder a los servicios remotamente, poder tener empleados realizando teletrabajo. Una opción por las que muchos están optando es adquirir un router:



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Objetivos

Los objetivos a alcanzar para implementar soluciones en hogar y empresa son:

- Configuración por defecto
- Configuración desde cero de nuestro dispositivo
- Configuración red WAN y LAN (cableada y Wi-Fi)
- Firewall básico
- Calidad de servicio
- DNS
- Backups
- VPN

Configuración por defecto

MikroTik



Configuración por defecto

RouterOS Default Configuration

The following default configuration has been installed on your router:

RouterMode:

- * WAN port is protected by firewall and enabled DHCP client
- * Wireless and Ethernet interfaces (except WAN port ether1) are part of LAN bridge

wlan1 Configuration:

mode: ap-bridge;
band: 2ghz-b/g/n;
ht-chains: 0,1;
ht-extension: 20/40mhz-Ce;

LAN Configuration:

IP address 192.168.88.1/24 is set on bridge (LAN port)
DHCP Server: enabled;

WAN (gateway) Configuration:

gateway: ether1 ;
ip4 firewall: enabled;
NAT: enabled;
DHCP Client: enabled;
DNS: enabled;

Remove Configuration

Show Script...

OK

Configuración desde cero de nuestro dispositivo

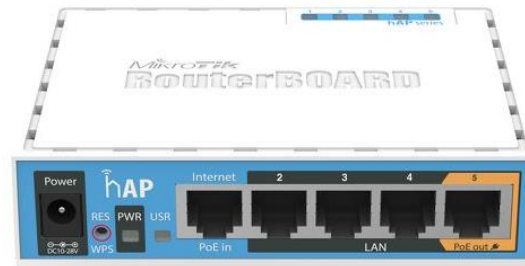
MikroTik

1) Escoger el dispositivo

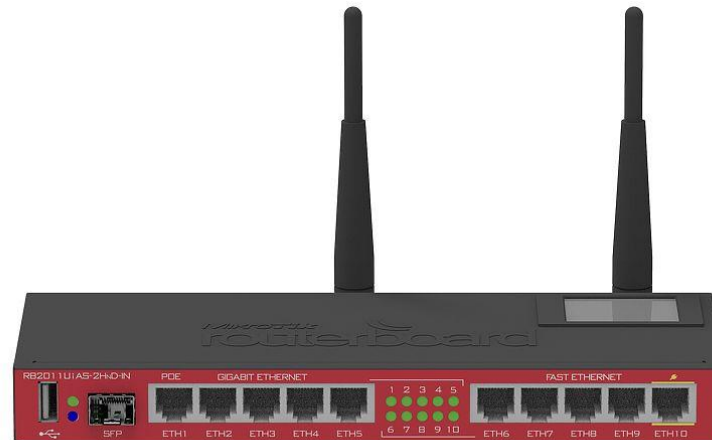


RB931

RB941



RB952



RB2011



1) Escoger el dispositivo

Product code	RB931-2nD
CPU	QCA9533
CPU nominal frequency	650 MHz
CPU core count	1
Size of RAM	32 MB
10/100 Ethernet ports	3
Wireless	Built-in 2.4 GHz 802.11b/g/n, dual-chain



1) Escoger el dispositivo

Antenna gain	1.5 dBi
Antenna beam width	360°
Wireless chip model	QCA9533
Supported input voltage	5 V (Jack)
Dimensions	48 x 78 x 81mm
License level	4
Operating System	RouterOS

2) Eliminar la configuración por defecto

RouterOS Default Configuration

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WAN (gateway) Configuration:

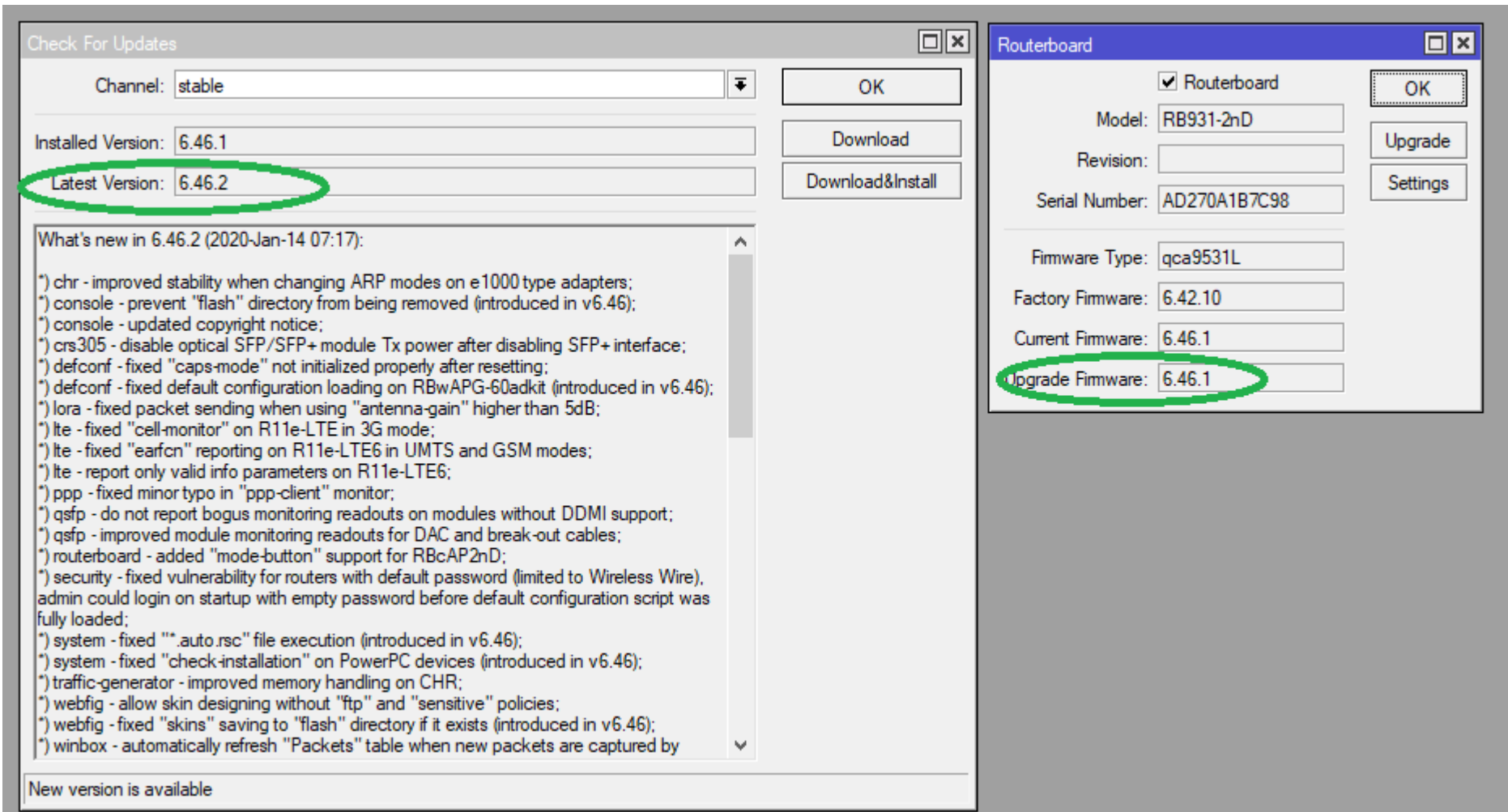
gateway: ether1;
ip4 firewall: enabled;
NAT: enabled;
DHCP Client: enabled;
DNS: enabled;

Remove Configuration

Show Script...

OK

3) Actualizar versión RouterOS y el firmware



The image shows two screenshots from the Mikrotik WinBox interface. The left screenshot is the 'Check For Updates' window, showing the 'stable' channel with the installed version 6.46.1 and the latest version 6.46.2 circled in green. Below this, a list of changes for version 6.46.2 is displayed. The right screenshot is the 'Routerboard' configuration window, showing fields for Model (RB931-2nD), Revision, Serial Number (AD270A1B7C98), Firmware Type (qca9531L), Factory Firmware (6.42.10), Current Firmware (6.46.1), and Upgrade Firmware (6.46.1), with the Upgrade Firmware field circled in green.

Check For Updates

Channel:

Installed Version:

Latest Version:

What's new in 6.46.2 (2020-Jan-14 07:17):

- *) chr - improved stability when changing ARP modes on e1000 type adapters;
- *) console - prevent "flash" directory from being removed (introduced in v6.46);
- *) console - updated copyright notice;
- *) crs305 - disable optical SFP/SFP+ module Tx power after disabling SFP+ interface;
- *) defconf - fixed "caps-mode" not initialized properly after resetting;
- *) defconf - fixed default configuration loading on RBwAPG-60adkit (introduced in v6.46);
- *) lora - fixed packet sending when using "antenna-gain" higher than 5dB;
- *) lte - fixed "cell-monitor" on R11e-LTE in 3G mode;
- *) lte - fixed "earfcn" reporting on R11e-LTE6 in UMTS and GSM modes;
- *) lte - report only valid info parameters on R11e-LTE6;
- *) ppp - fixed minor typo in "ppp-client" monitor;
- *) qsf - do not report bogus monitoring readouts on modules without DDMI support;
- *) qsf - improved module monitoring readouts for DAC and break-out cables;
- *) routerboard - added "mode-button" support for RBcAP2nD;
- *) security - fixed vulnerability for routers with default password (limited to Wireless Wire), admin could login on startup with empty password before default configuration script was fully loaded;
- *) system - fixed ".auto.rsc" file execution (introduced in v6.46);
- *) system - fixed "check-installation" on PowerPC devices (introduced in v6.46);
- *) traffic-generator - improved memory handling on CHR;
- *) webfig - allow skin designing without "ftp" and "sensitive" policies;
- *) webfig - fixed "skins" saving to "flash" directory if it exists (introduced in v6.46);
- *) winbox - automatically refresh "Packets" table when new packets are captured by

New version is available

Routerboard

☒ Routerboard

Model:

Revision:

Serial Number:

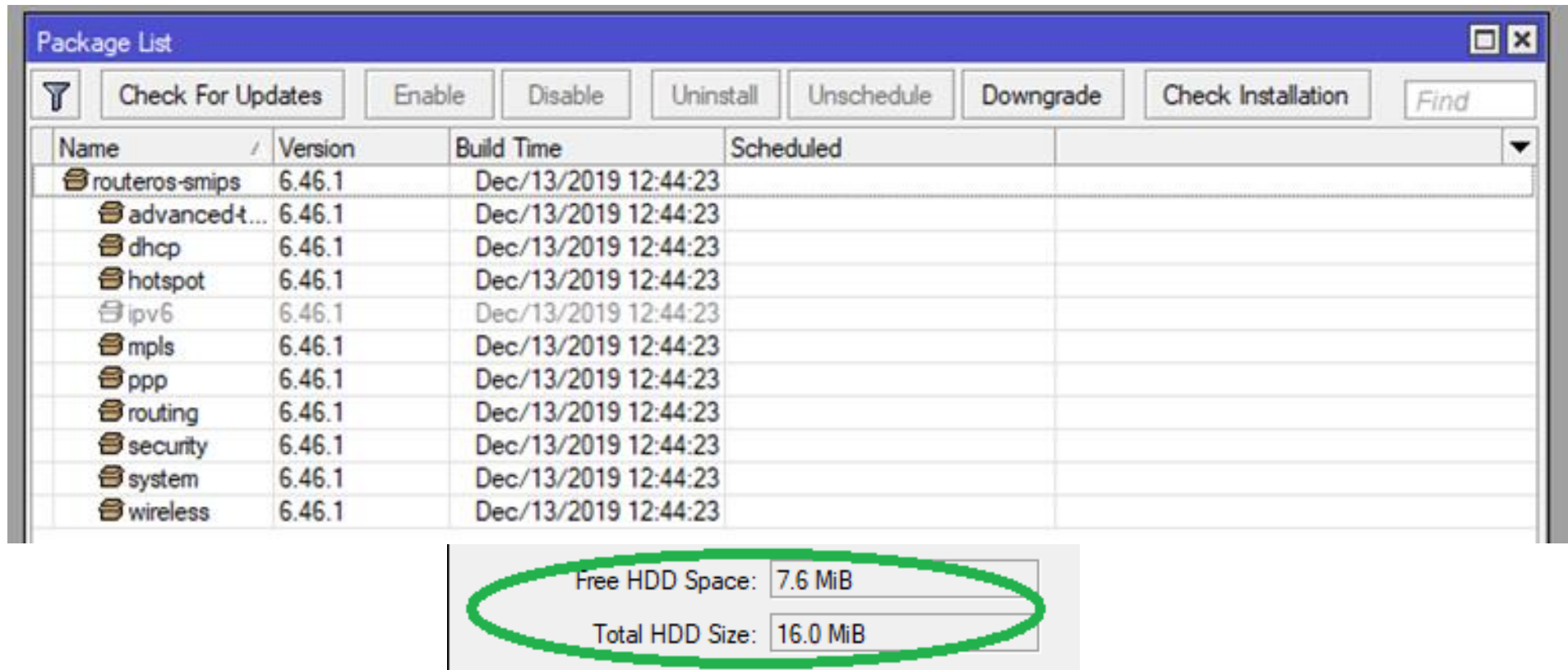
Firmware Type:

Factory Firmware:

Current Firmware:

Upgrade Firmware:

3) Actualizar versión RouterOS y el firmware

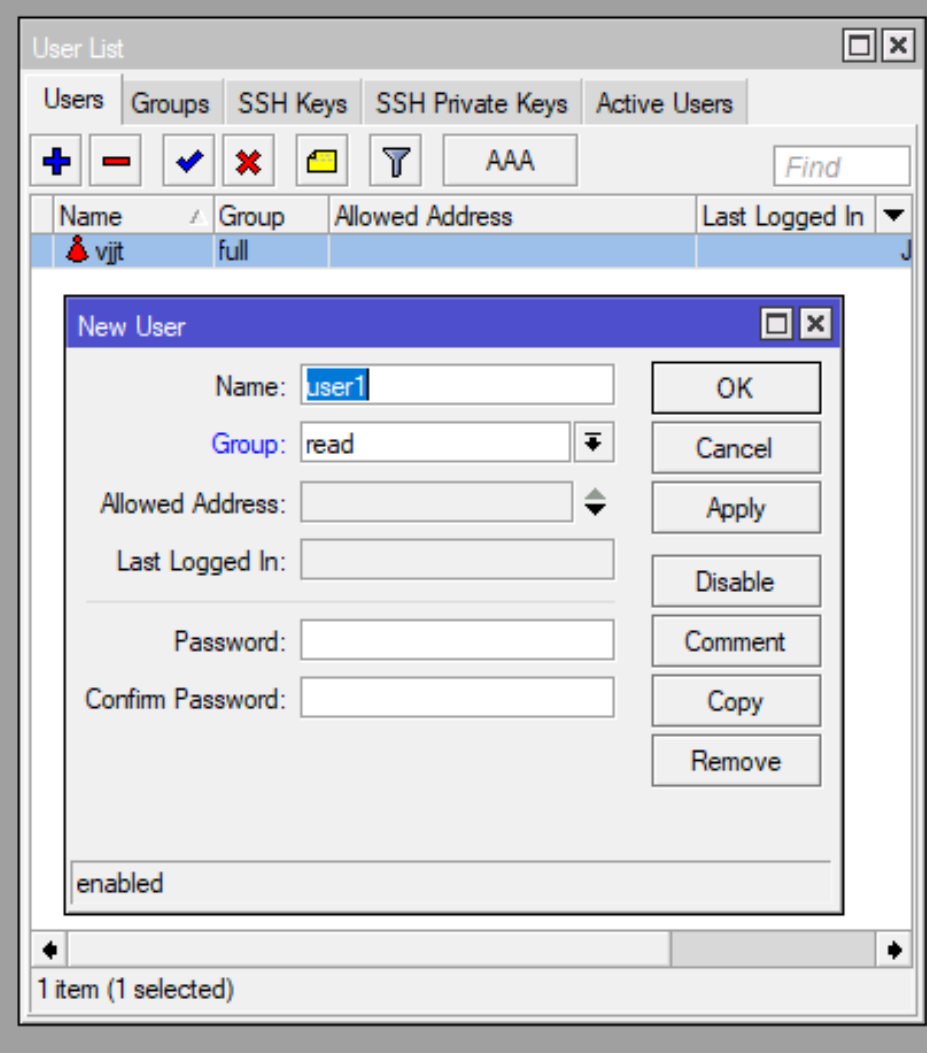


The screenshot shows the 'Package List' window in RouterOS. It contains a table of installed packages and their details. At the bottom, a green oval highlights the HDD space information.

Name	Version	Build Time	Scheduled
routeros-smips	6.46.1	Dec/13/2019 12:44:23	
advanced-t...	6.46.1	Dec/13/2019 12:44:23	
dhcp	6.46.1	Dec/13/2019 12:44:23	
hotspot	6.46.1	Dec/13/2019 12:44:23	
ipv6	6.46.1	Dec/13/2019 12:44:23	
mpls	6.46.1	Dec/13/2019 12:44:23	
ppp	6.46.1	Dec/13/2019 12:44:23	
routing	6.46.1	Dec/13/2019 12:44:23	
security	6.46.1	Dec/13/2019 12:44:23	
system	6.46.1	Dec/13/2019 12:44:23	
wireless	6.46.1	Dec/13/2019 12:44:23	

Free HDD Space: 7.6 MiB
Total HDD Size: 16.0 MiB

4) Asignar un usuario y contraseña



The screenshot displays the 'User List' window with the 'Users' tab selected. A 'New User' dialog box is open, allowing for the creation of a new user. The dialog includes fields for Name, Group, Allowed Address, Last Logged In, Password, and Confirm Password. The 'Name' field is set to 'User1' and the 'Group' is set to 'read'. The 'Allowed Address' field is empty. The 'Last Logged In' field is empty. The 'Password' and 'Confirm Password' fields are empty. The 'enabled' checkbox is checked. The 'New User' dialog box has buttons for OK, Cancel, Apply, Disable, Comment, Copy, and Remove. The 'User List' window has a table with columns: Name, Group, Allowed Address, and Last Logged In. The table contains one row with the user 'vijt' in the 'full' group. The 'Find' button is visible in the top right of the 'User List' window. The status bar at the bottom indicates '1 item (1 selected)'.

User List

Users Groups SSH Keys SSH Private Keys Active Users

+ - ✓ ✗ 📁 🔍 AAA Find

Name	Group	Allowed Address	Last Logged In
vijt	full		

New User

Name: User1

Group: read

Allowed Address:

Last Logged In:

Password:

Confirm Password:

enabled

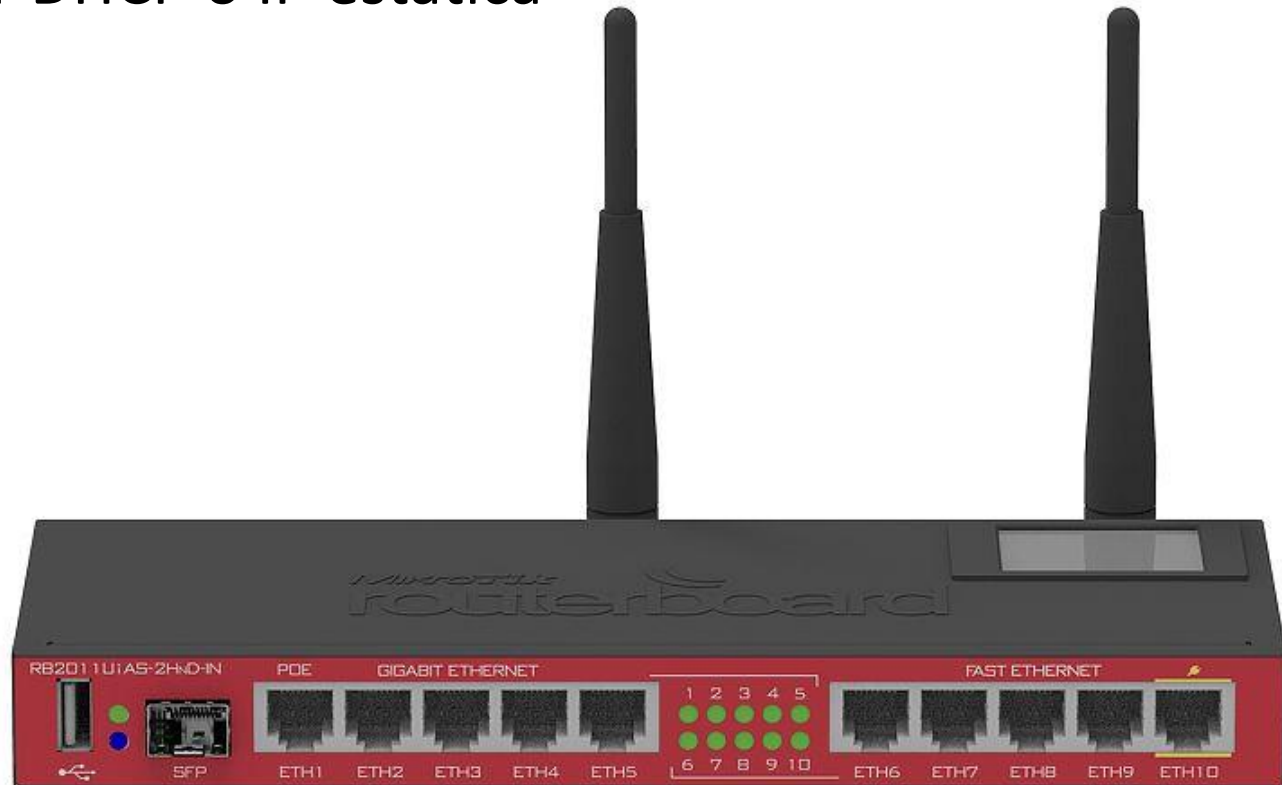
OK Cancel Apply Disable Comment Copy Remove

1 item (1 selected)

Configuración WAN y LAN (cableada y Wi-Fi)

1) Definir los puertos a utilizar

- Recomendación para el puerto WAN usar cualquiera diferente al ETH1, por DHCP o IP estática



2) Especificar los servicios requeridos en la LAN

- Cámaras de seguridad
- Automatización del hogar u oficina
- Servidores (telefonía, crm, etc.)
- Número de sedes (VPN)
- Visitantes (opción hotspot con trial)
- Dispositivos a conectar
- Ancho de banda total
- Servidor NTP





3) Ejemplo

- Oficina con 5 empleados, servidor VOIP, cámaras, alarma, automatización de luces, 2 sedes remotas, 2 empleados por teletrabajo, computador de escritorio por empleado, dispositivo Wi-Fi por empleado, visitantes diariamente llegan a la oficina, ancho de banda de 40 Mbps dedicados
- Por cable red empleados: 192.168.20.0/24 (5 puertos ethernet)
- Por cable servidor, cámaras, alarma red 192.168.50.0/28 (3 puertos ethernet)
- Por wifi 3 redes: empleados 192.168.10.0/24 – visitantes 192.168.15.0/24 – automatización de luces 192.168.30.0/28



4) Configuración red Wi-Fi usando virtual AP

Interface <wlan1>

General Wireless Data Rates Advanced HT HT MCS WDS ...

Mode: ap bridge

Band: 2GHz-B/G/N

Channel Width: 20/40MHz eC

Frequency: auto MHz

SSID: empleados

Radio Name: 744D28D505A8

Scan List: default

Wireless Protocol: any

Security Profile: empleados

WPS Mode: disabled

Interface <wlan2>

General Wireless WDS Status Traffic

Mode: ap bridge

Secondary Channel:

SSID: visitantes

Master Interface: wlan1

Security Profile: visitantes

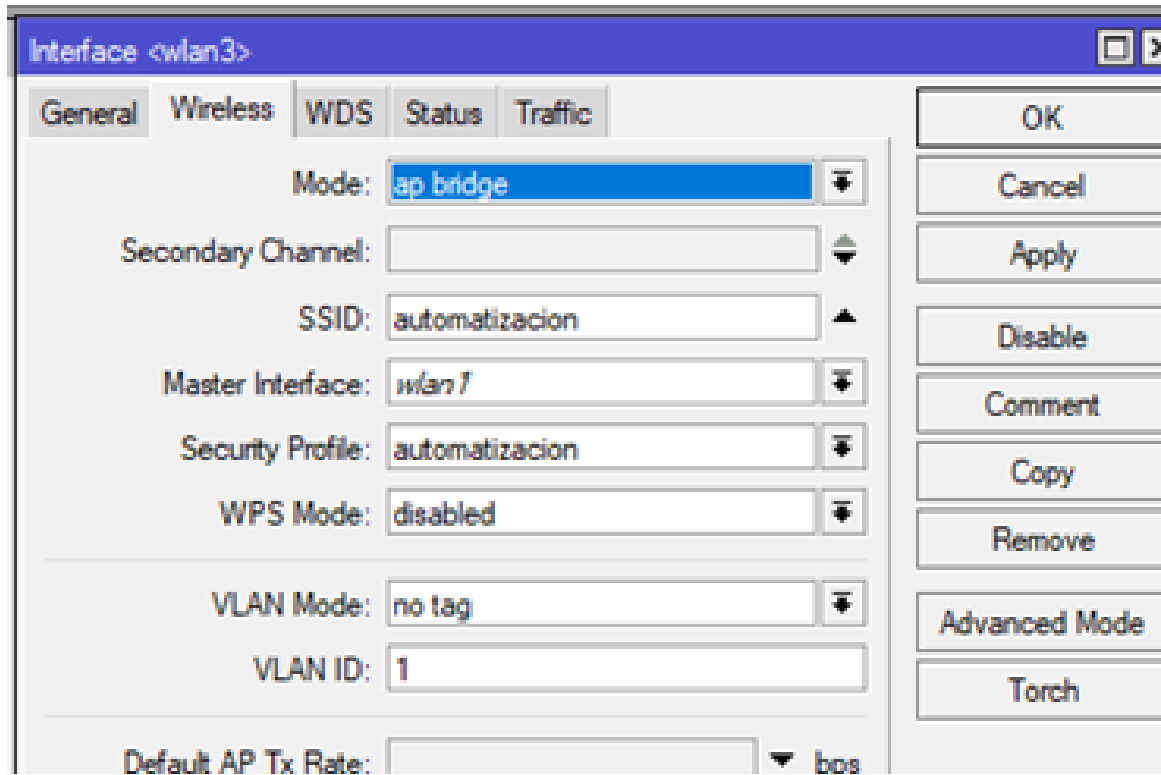
WPS Mode: disabled

VLAN Mode: no tag

VLAN ID: 1

Default AP Tx Rate: hns

4) Configuración red Wi-Fi usando virtual AP



The screenshot shows the 'Interface <wlan3>' configuration window with the 'Wireless' tab selected. The window has a title bar with a close button. The tabs are 'General', 'Wireless', 'WDS', 'Status', and 'Traffic'. The 'Wireless' tab contains the following settings:

- Mode: **ap bridge** (dropdown menu)
- Secondary Channel: (empty text field)
- SSID: **automatizacion** (text field)
- Master Interface: **wlan1** (dropdown menu)
- Security Profile: **automatizacion** (dropdown menu)
- WPS Mode: **disabled** (dropdown menu)
- VLAN Mode: **no tag** (dropdown menu)
- VLAN ID: **1** (text field)
- Default AP Tx Rate: (empty text field)

On the right side of the window, there is a vertical stack of buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove, Advanced Mode, and Torch.

4) Configuración red Wi-Fi usando virtual AP

Wireless Tables

WiFi Interfaces W60G Station Nstreme Dual A

+ - ✓ ✗ 📁 📶 CAP

	Name	Type
	📶 wlan1	Wireless (Atheros AR9...
	📶-📶 wlan2	Virtual
	📶-📶 wlan3	Virtual



4) Configuración red Wi-Fi usando virtual AP

Wireless Tables

WiFi InterfacesW60G StationNstreme DualAccess ListRegistrationConnect ListSecurity ProfilesChannels



Name	Mode	Authenticatio...	Unicast Ciphers	Group Ciphers	WPA Pre-Shared ...	WPA2 Pre-Shared...
visitantes	dynamic keys	WPA2 PSK	aes ccm tkip	aes ccm tkip		qwerty123
empleados	dynamic keys	WPA2 PSK	aes ccm tkip	aes ccm tkip		abcd1234
* default	none					
automatizacion	dynamic keys	WPA2 PSK	aes ccm tkip	aes ccm tkip		qazxswedc

4) Configuración red Wi-Fi usando Access-List

WiFi Interfaces W60G Station Nstreme Dual Access List Registration Connect List Security Profiles Chan

+ - ✓ ✗ 📄 📶

#	MAC Address	Interface	Signal Str...	Authentication	Forwarding
0	00:27:15:DD:EA:...	wlan1	-120..120	yes	yes

AP Access Rule <00:27:15:DD:EA:AE>

MAC Address: 00:27:15:DD:EA:AE

Interface: wlan1

Signal Strength Range: -120..120

Allow Signal Out Of Range: 00:00:10

AP Tx Limit:

Client Tx Limit:

☒ Authentication

☒ Forwarding

VLAN Mode: no tag

VLAN ID: 1

Private Key: none 0x

Private Pre Shared Key:

Management Protection Key:

Time

Time: 00:00:00 - 1d 00:00:00

Days: ☒ sun ☒ mon ☒ tue ☒ wed ☒ thu ☒ fri ☒ sat

OK Cancel Apply Disable Comment Copy Remove

Firewall Básico

MikroTik



1) Cambiar puertos por defecto desactivar los no utilizados

IP Service List					
☒ ☐ ☐ Find					
	Name	Port	Available From	Certificate	
	api	8728	157.245.190.83		
X	api-ssl	8729		none	
X	ftp	21			
	ssh	49722			
X	telnet	49723			
	winbox	8291			
	www	49780			
X	www-ssl	443		none	
8 items					

2) Port knocking

Firewall															
Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols															
+ - ✓ ✗ 📁 🔍 00 Reset Counters 00 Reset All Counters															
#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	In. Inter...	Out. Int...	Src. Ad...	Dst. Ad...	Bytes	Packets
0	add...	input			6 (tcp)		20567							640 B	12
1	add...	input			6 (tcp)		31678					reten1		580 B	11
2	add...	input			6 (tcp)		42789					reten2		580 B	11
3	✗ drop	input			6 (tcp)		8291,49780,49722					reten3		197.9 KiB	4 714
4	⊗ tarpit	input			6 (tcp)		22-23	ether3						6.4 MiB	162 254
... VPN PPTP															
5	✓ acc...	input			6 (tcp)		1723							78.5 KiB	1 131
... VPN PPTP															
6	✓ acc...	input			47 (g...									2985.9 KiB	34 074
... VPN L2TP															
7	✓ acc...	input			17 (u...		1701							7.8 MiB	87 942
... CONEXIONES SIMULTANEAS POR CLIENTE															
8 X	✗ drop	forward			6 (tcp)									0 B	0
... BLOQUEO CONEXIONES INVALIDAS															
9	✗ drop	input												46.6 MiB	746 533
10	✗ drop	output												129.3 KiB	308
11	✗ drop	forward												144.1 MiB	2 680 672

2) Port knocking

New Firewall Rule

General Advanced Extra Action Statistics

Chain:

Src. Address:

Dst. Address:

Protocol: ☐ 6 (tcp)

Src. Port:

Dst. Port: ☐ 50000

Any. Port:

In. Interface:

OK
Cancel
Apply
Disable
Comment
Copy
Remove
Reset Counters
Reset All Counters

New Firewall Rule

Advanced Extra Action Statistics ...

Action:

☐ Log

Log Prefix:

Address List:

Timeout:

OK
Cancel
Apply
Disable
Comment
Copy
Remove
Reset Counters
Reset All Counters

2) Port knocking

New Firewall Rule

General Advanced Extra Action Statistics

Chain: input

Src. Address:

Dst. Address:

Protocol: 6 (tcp)

Src. Port:

Dst. Port: 40000

Any. Port:

In. Interface:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

New Firewall Rule

General Advanced Extra Action Statistics

Src. Address List: puerto_1PK

Dst. Address List:

Layer7 Protocol:

Content:

Connection Bytes:

Connection Rate:

Per Connection Classifier:

Src. MAC Address:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

2) Port knocking

New Firewall Rule

General Advanced Extra Action Statistics

Chain: input

Src. Address:

Dst. Address:

Protocol: ☐ 6 (tcp)

Src. Port:

Dst. Port: ☐ 40000

Any. Port:

In. Interface:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

New Firewall Rule

General Advanced Extra Action Statistics

Action: add src to address list

☐ Log

Log Prefix:

Address List: puerto_2PK

Timeout: 00:10:00

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

2) Port knocking

New Firewall Rule

General Advanced Extra Action Statistics

Chain: input

Src. Address:

Dst. Address:

Protocol: ☐ 6 (tcp)

Src. Port:

Dst. Port: ☐ 8291

Any. Port:

In. Interface:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

New Firewall Rule

General Advanced Extra Action Statistics

Src. Address List: puerto_2PK

Dst. Address List:

Layer7 Protocol:

Content:

Connection Bytes:

Connection Rate:

Per Connection Classifier:

Src. MAC Address:

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

New Firewall Rule

General Advanced Extra Action Statistics

Action: drop

☐ Log

Log Prefix:

OK

Cancel

Apply

Disable

Comment

4) Servicios pagos para listas



Firewall															
Filter Rules															
NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols															
+ - [check] [x] [icon] [funnel] 00 Reset Counters 00 Reset All Counters															
#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	In. Inter...	Out. Int...	Src. Ad...	Dst. Address List	Bytes	Packets
0	✗ drop	input			17 (u...		53	ether1						7.6 KiB	120
1	✗ drop	input			17 (u...		53	ether2						3968 B	61
2	✗ drop	input			17 (u...		53	ether12						3678 B	56
... AX001 - Packet Trap															
3	⊗ tarpit	input			6 (tcp)							blocke...		0 B	0
... AX002 - Connection Limit															
4	➡ add...	input			6 (tcp)									0 B	0
... AX004 - Add Syn Flood IP to the list															
5	➡ add...	input			6 (tcp)									0 B	0
... AX005 - Drop to syn flood list															
6	✗ drop	input										Syn_Fl...		0 B	0
... AX006 - Port Scanner Detect															
7	➡ add...	input			6 (tcp)									3280 B	82

Información tomada de <https://axiomcyber.com/shield/>

4) Servicios pagos para listas

... AX008 - Drop to port scan list												
8	✖ drop	input								Port_S...	41.9 KiB	1 104
... AX007 - Drop Access to WebUI												
9	✖ drop	output		6 (tcp)	80						0 B	0
... AX011 - Block all access to Winbox - except to support list # DO NOT ENABLE THIS RULE BEFORE ADD YOUR SUBNET IN THE SUPPORT ADDRESS LIST												
10	✖ drop	input		6 (tcp)	8291					!support	734.3 KiB	18 704
... AX036 - Drop to ransomware list												
11	✖ drop	forward								ransomware	2264 B	50
... AX037 - Drop to TOR list												
12	✖ drop	forward								tor_nodes	90.5 KiB	1 219
... AX041 - Drop invalid/malformed packets												
13	✖ drop	forward									1983.4 KiB	37 737
... AX014 - Add Spammers to the list for 3 hours												
14	➡ add...	forward		6 (tcp)	25,587						0 B	0
... AX015 - Avoid spammers action												
15	✖ drop	forward		6 (tcp)	25,587					spamm...	0 B	0



4) Servicios pagos para listas



Ransomware (Nodes, Sites, IP addresses)



Malware (Nodes, Sites, IP addresses)



Command & Control servers



Known spammers and spam servers



TOR Exit Nodes (DarkWeb)



Layer 7 Regular Expression blocking

Calidad de Servicio

MikroTik

1) Velocidad por red

Queue List							
Simple Queues		Interface Queues	Queue Tree	Queue Types			
+	-	✓	✗	📁	🔍	∞ Reset Counters	∞ Reset All Counters
#	Name	Target	Dst.	Upload Max Limit	Download Max Limit	Upload Queue Type	Download Queue Type
0	Red_empleados	192.168.20.0/24	ether10	20M	20M	pcq-upload-default	pcq-download-default
1	servidor_camaras_alama	192.168.50.0/24	ether10	10M	10M	pcq-upload-default	pcq-download-default
2	wifi_empleados	192.168.10.0/24	ether10	5M	5M	pcq-upload-default	pcq-download-default
3	wifi_visitantes	192.168.15.0/24	ether10	2M	2M	pcq-upload-default	pcq-download-default
4	wifi_automatizacion	192.168.30.0/24	ether10	4M	4M	pcq-upload-default	pcq-download-default

Simple Queue <servidor_camaras_alama>

General Advanced Statistics Traffic Total Total Statistics

Name: servidor_camaras_alama

Target: 192.168.50.0/24

Dst.: ether10

Target Upload Target Download

Max Limit: 10M 10M bits/s

Burst Burst Limit: unlimited unlimited bits/s

Burst Threshold: unlimited unlimited bits/s

Burst Time: 0 0 s

enabled

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters Torch

Simple Queue <Red_empleados>

General Advanced Statistics Traffic Total Total Statistics

Packet Marks:

Target Upload Target Download

Limit At: unlimited unlimited bits/s

Priority: 8 8

Bucket Size: 0.100 0.100 ratio

Queue Type: pcq-upload-default pcq-download-default

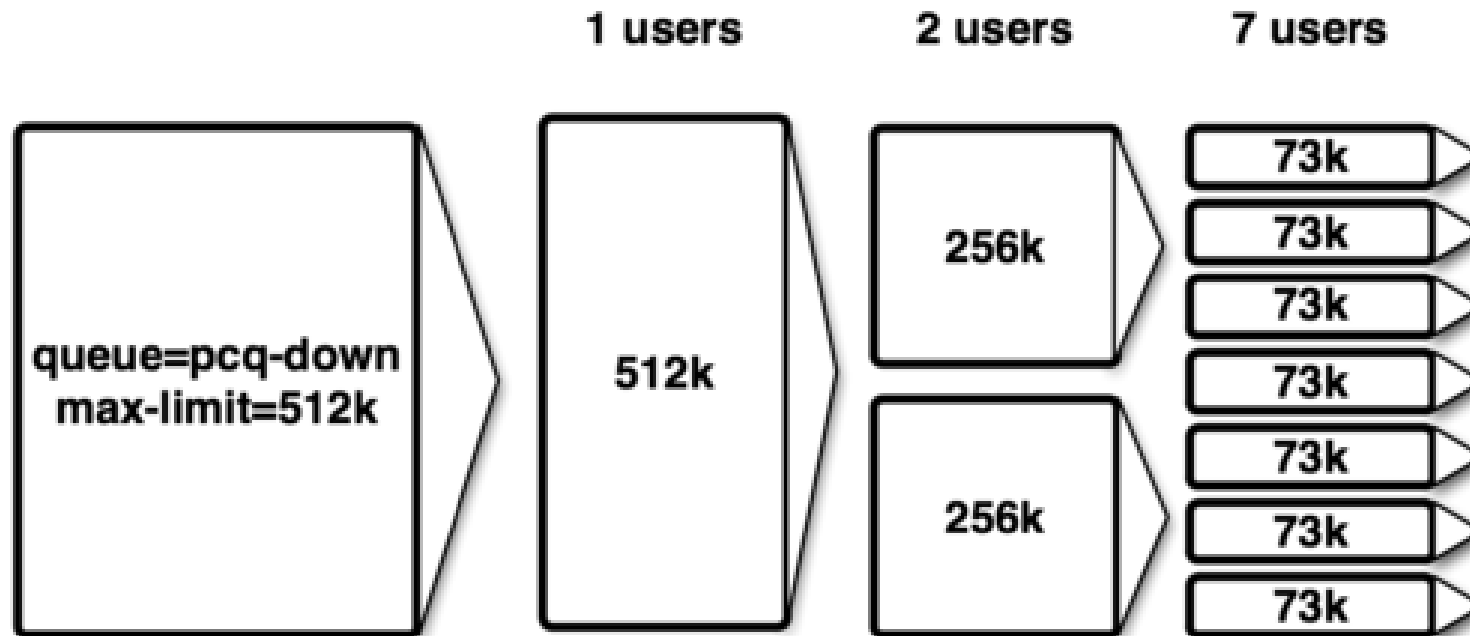
Parent: none

enabled

OK Cancel Apply Disable Comment Copy Remove Reset Counters Reset All Counters Torch

2) QoS usando PCQ

pcq-rate=0





3) Mangle (marcado de conexiones)

Firewall									
Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols									
+ - ✓ ✗ 📄 🔍 00 Reset Counters 00 Reset All Counters									
#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inte	
0	X mar...	prerouting							
1	X mar...	prerouting							
2	jump	forward							
3	jump	forward							
... voip									
4	mar...	conmark			17 (u...		5060-506...		
... YOUTUBE									
5	mar...	conmark			6 (tcp)				
... http-https									
6	mar...	conmark			6 (tcp)		80,443		
... PING									
7	mar...	conmark			1 (ic...				
... DNS									
8	mar...	conmark			17 (u...		53		
... rest									
9	mar...	conmark							
10	return	conmark							
... VOIP									
11	mar...	pktmark							
... YOUTUBE									
12	mar...	pktmark							
... HTTP-HTTPS									
13	mar...	pktmark							
... PING									
14	mar...	pktmark							
... DNS									
15	mar...	pktmark							
... SIN MARCA									
16	mar...	pktmark							



4) Queue Tree (asignar prioridades a los servicios marcados)

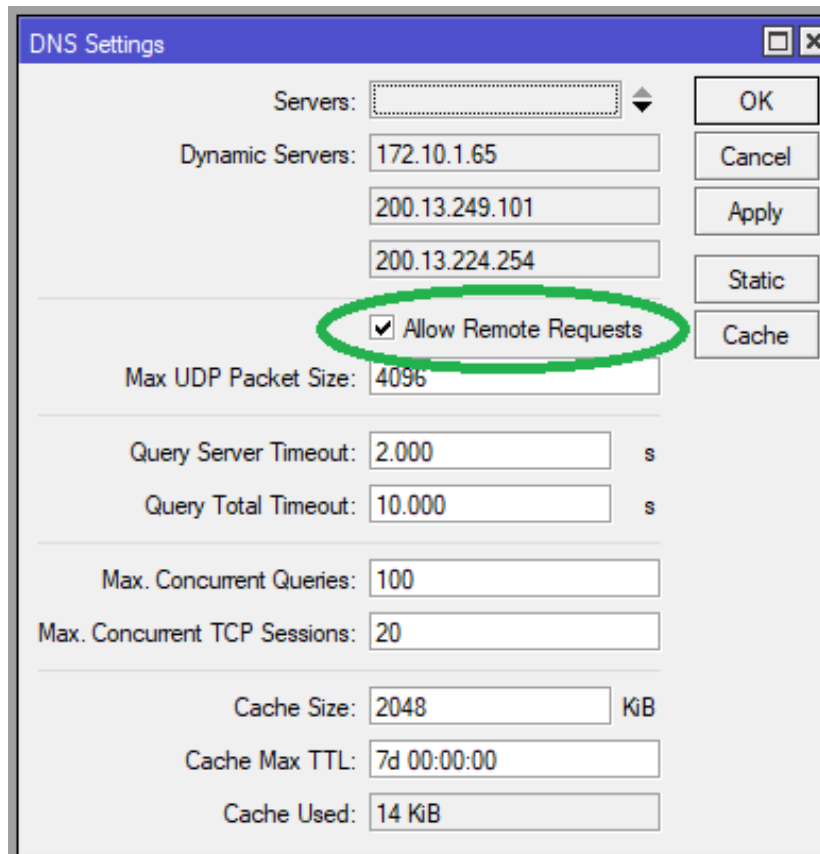
Queue List						
Simple Queues Interface Queues Queue Tree Queue Types						
+ - ☑ ✗ 📄 🔍 00 Reset Counters 00 Reset All Counters						
Name	Parent	Packet Marks	Priority	Limit At (b...	Max Limit ...	
Download-1	ether2		8		400M	
DNS	Download-1	DNS	3	10M	20M	
HTTP	Download-1	HTTP	5	150M	300M	
PING	Download-1	ICMP	3	10M	20M	
TRAFREST	Download-1	SINMARCA	8	100M	150M	
VOIP	Download-1	VOIP	2	30M	50M	
YOUTUBE	Download-1	YOUTUBE	3	100M	150M	
Download-2	ether7		8		400M	
DNS-2	Download-2	DNS	3	10M	20M	
HTTP2	Download-2	HTTP	5	150M	300M	
PING2	Download-2	ICMP	3	10M	20M	
TRAFREST2	Download-2	SINMARCA	8	100M	150M	
VOIP2	Download-2	VOIP	2	30M	50M	
YOUTUBE2	Download-2	YOUTUBE	3	100M	150M	
Upload	sfp1		8		800M	
DNS-UP	Upload	DNS	3	20M	40M	
HTTPUP	Upload	HTTP	5	300M	600M	
PINGUP	Upload	ICMP	3	20M	40M	
TRAFRESTUP	Upload	SINMARCA	8	200M	300M	
VOIPUP	Upload	VOIP	2	60M	100M	
YOUTUBEUP	Upload	YOUTUBE	3	200M	300M	

DNS

MikroTik

1) Usar Router como servidor DNS

- Podemos configurar el Router como un servidor DNS



The screenshot shows the 'DNS Settings' window with the following configuration:

- Servers:** (Empty dropdown menu)
- Dynamic Servers:**
 - 172.10.1.65
 - 200.13.249.101
 - 200.13.224.254
- ☒ **Allow Remote Requests** (This checkbox is circled in green)
- Max UDP Packet Size:** 4096
- Query Server Timeout:** 2.000 s
- Query Total Timeout:** 10.000 s
- Max. Concurrent Queries:** 100
- Max. Concurrent TCP Sessions:** 20
- Cache Size:** 2048 KiB
- Cache Max TTL:** 7d 00:00:00
- Cache Used:** 14 KiB

Buttons on the right: OK, Cancel, Apply, Static, Cache.

2) Entradas estáticas

- Es posible configurar nombres para acceder servicios de nuestra LAN

DNS Static

+ - ✓ ✗ [Icon] [Icon]

#	Name	Regexp
New DNS Static Entry		
Name:	voip.miempresa.com	OK
Regexp:		Cancel
Address:	192.168.50.10	Apply
TTL:	1d 00:00:00 s	Disable
		Comment

← → ↻ No es seguro | voip.miempresa.com



👤 | Username

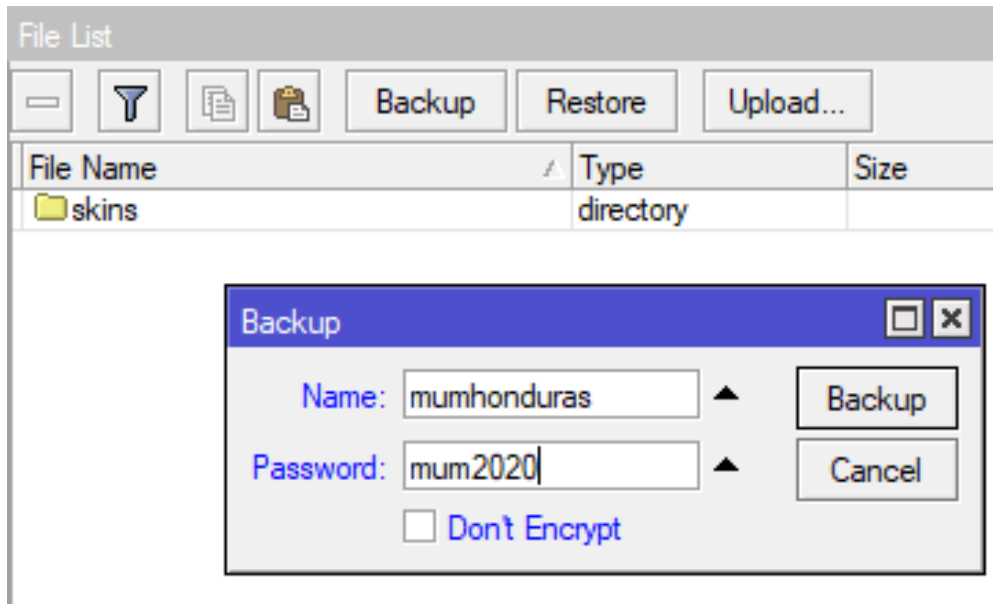
🔑 | Password

Backups

MikroTik

1) .backup

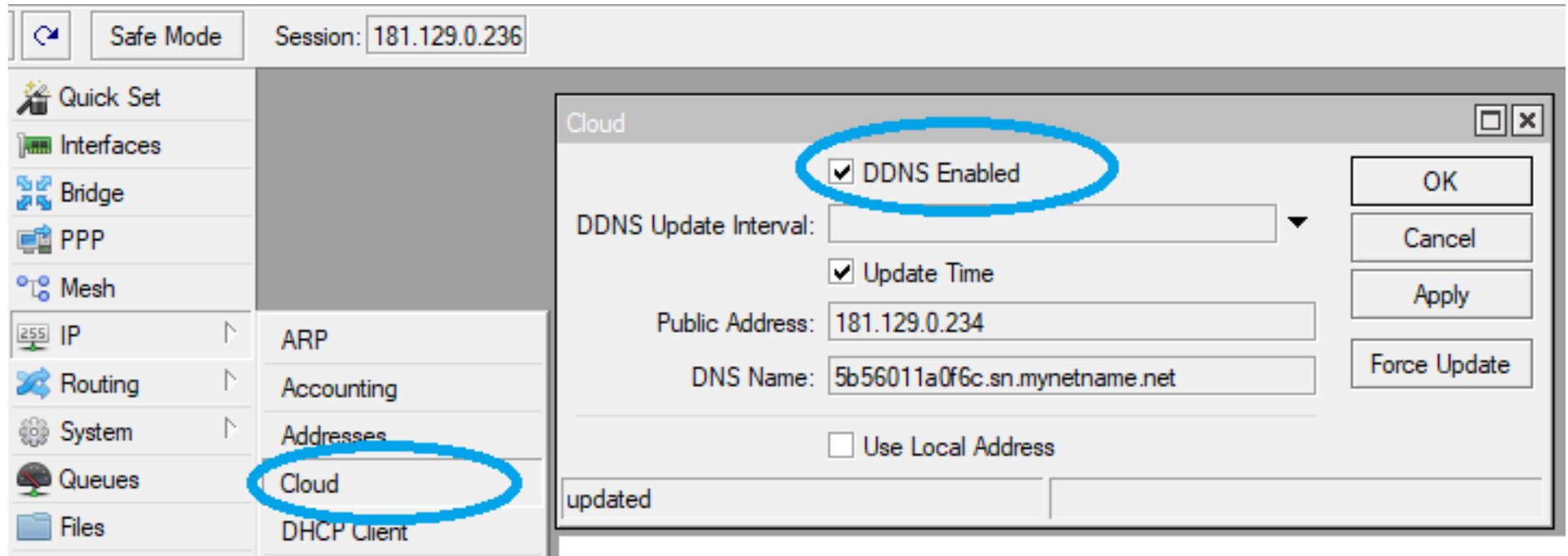
- En files → Backup (extensión .backup)



File List				
Backup Restore Upload...				
File Name	Type	Size	Creation Time	
mumhonduras.backup	backup	16.1 KiB	Jan/13/2020 00:27:40	
skins	directory		Feb/07/2106 01:28:20	

1) .backup

Cloud backup. Desde la versión 6.14 se tiene disponible, versiones anteriores a 6.43 **cloud.mikrotik.com** versiones de 6.43 en adelante se comunican con **cloud2.mikrotik.com**



The screenshot shows the Mikrotik WinBox interface. On the left, the 'System' menu is expanded, and 'Cloud' is highlighted with a blue circle. The 'Cloud' configuration window is open, showing the following settings:

- ☒ DDNS Enabled (circled in blue)
- DDNS Update Interval: [dropdown menu]
- ☒ Update Time
- Public Address: 181.129.0.234
- DNS Name: 5b56011a0f6c.sn.mynetname.net
- ☐ Use Local Address

Buttons on the right: OK, Cancel, Apply, Force Update. A status bar at the bottom left of the window shows 'updated'.

1) .backup

Cloud backup. Desde la versión 6.14 se tiene disponible, versiones anteriores a 6.43 **cloud.mikrotik.com** versiones de 6.43 en adelante se

```
Terminal
MMM      MMM      KKK      TTTTTTTTTTT      KKK
MMM      MMM      KKK      TTTTTTTTTTT      KKK
MMM MMMM MMM  III  KKK KKK  RRRRRR      000000      TTT      III  KKK KKK
MMM MM  MMM  III  KKKKK  RRR RRR  000 000      TTT      III  KKKKK
MMM      MMM  III  KKK KKK  RRRRRR      000 000      TTT      III  KKK KKK
MMM      MMM  III  KKK KKK  RRR RRR      000000      TTT      III  KKK KKK

MikroTik RouterOS 6.46.1 (c) 1999-2019      http://www.mikrotik.com/

[?]          Gives the list of available commands
command [?]  Gives help on the command and list of arguments

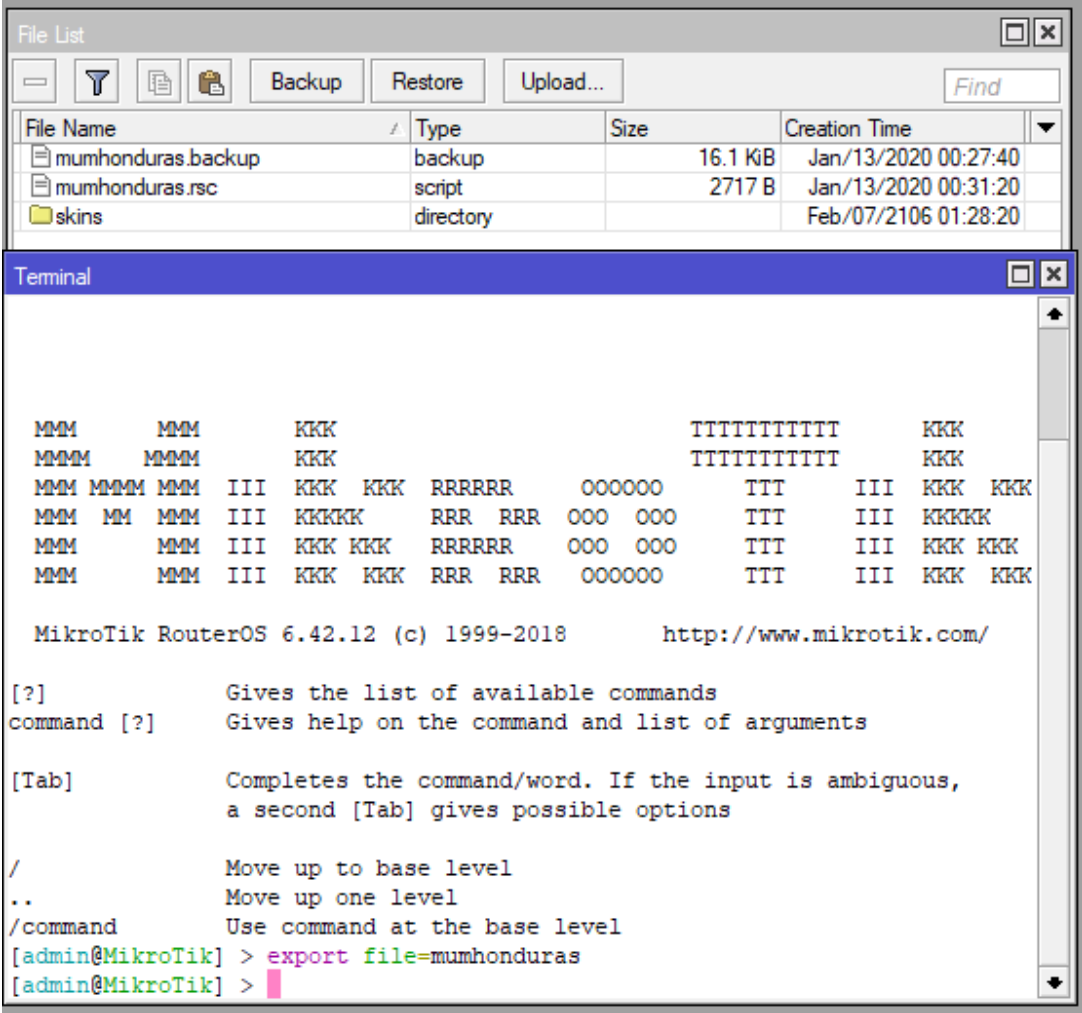
[Tab]        Completes the command/word. If the input is ambiguous,
              a second [Tab] gives possible options

/            Move up to base level
..          Move up one level
/command     Use command at the base level
[vjtt@CCR PPAL HOTEL] > /system backup cloud upload-file action=create-and-upload password=mumhonduras
status: finished

[vjtt@CCR PPAL HOTEL] > /system backup cloud print
0 name="cloud-20200113-004748" size=6.7MiB ros-version="6.46.1" date=jan/13/2020 00:47:56 status="ok"
secret-download-key="w3SLd3QHMO8borYtX07zSKt"
[vjtt@CCR PPAL HOTEL] >
```

2) .rsc

Por línea de comandos → export file=mumhonduras
(extensión .rsc)



The screenshot shows two windows from a Mikrotik RouterOS interface. The top window, titled 'File List', displays a table of files and folders. The bottom window, titled 'Terminal', shows the RouterOS command-line interface with ASCII art, version information, and a list of command shortcuts. The final command entered is `export file=mumhonduras`.

File Name	Type	Size	Creation Time
mumhonduras.backup	backup	16.1 KiB	Jan/13/2020 00:27:40
mumhonduras.rsc	script	2717 B	Jan/13/2020 00:31:20
skins	directory		Feb/07/2106 01:28:20

```
MikroTik RouterOS 6.42.12 (c) 1999-2018      http://www.mikrotik.com/

[?]          Gives the list of available commands
command [?]  Gives help on the command and list of arguments

[Tab]        Completes the command/word. If the input is ambiguous,
              a second [Tab] gives possible options

/            Move up to base level
..           Move up one level
/command     Use command at the base level
[admin@MikroTik] > export file=mumhonduras
[admin@MikroTik] >
```

2) .rsc



ccr1036tol: Bloc de notas

Archivo Edición Formato Ver Ayuda

```
# jan/16/2020 12:02:28 by RouterOS 6.46.1
# software id = ZMS5-WZT4
#
# model = CCR1036-12G-4S
# serial number = 5B56011A0F6C
/interface ethernet
set [ find default-name=ether1 ] advertise=\
    10M-half,10M-full,100M-half,100M-full,1000M-half,1000M-full speed=100Mbps
set [ find default-name=ether2 ] comment="PADRE AMAYA" speed=100Mbps
set [ find default-name=ether3 ] comment=WAN speed=100Mbps
set [ find default-name=ether4 ] comment=SERGIO speed=100Mbps
set [ find default-name=ether5 ] speed=100Mbps
set [ find default-name=ether6 ] advertise=10M-full,100M-full comment=\
    "HOTEL CM" speed=100Mbps
set [ find default-name=ether7 ] advertise=\
    10M-half,10M-full,100M-half,100M-full,1000M-half,1000M-full comment=\
    "PADRE AMAYA 2" speed=100Mbps
set [ find default-name=ether8 ] comment=ZARZAL speed=100Mbps
set [ find default-name=ether9 ] speed=100Mbps
set [ find default-name=ether10 ] comment="CLIENTE APTO 402" speed=100Mbps
set [ find default-name=ether11 ] comment="DVR EDIFICIO" speed=100Mbps
set [ find default-name=ether12 ] advertise=\
    10M-half,10M-full,100M-half,100M-full,1000M-half,1000M-full comment=CS
```

VPN's

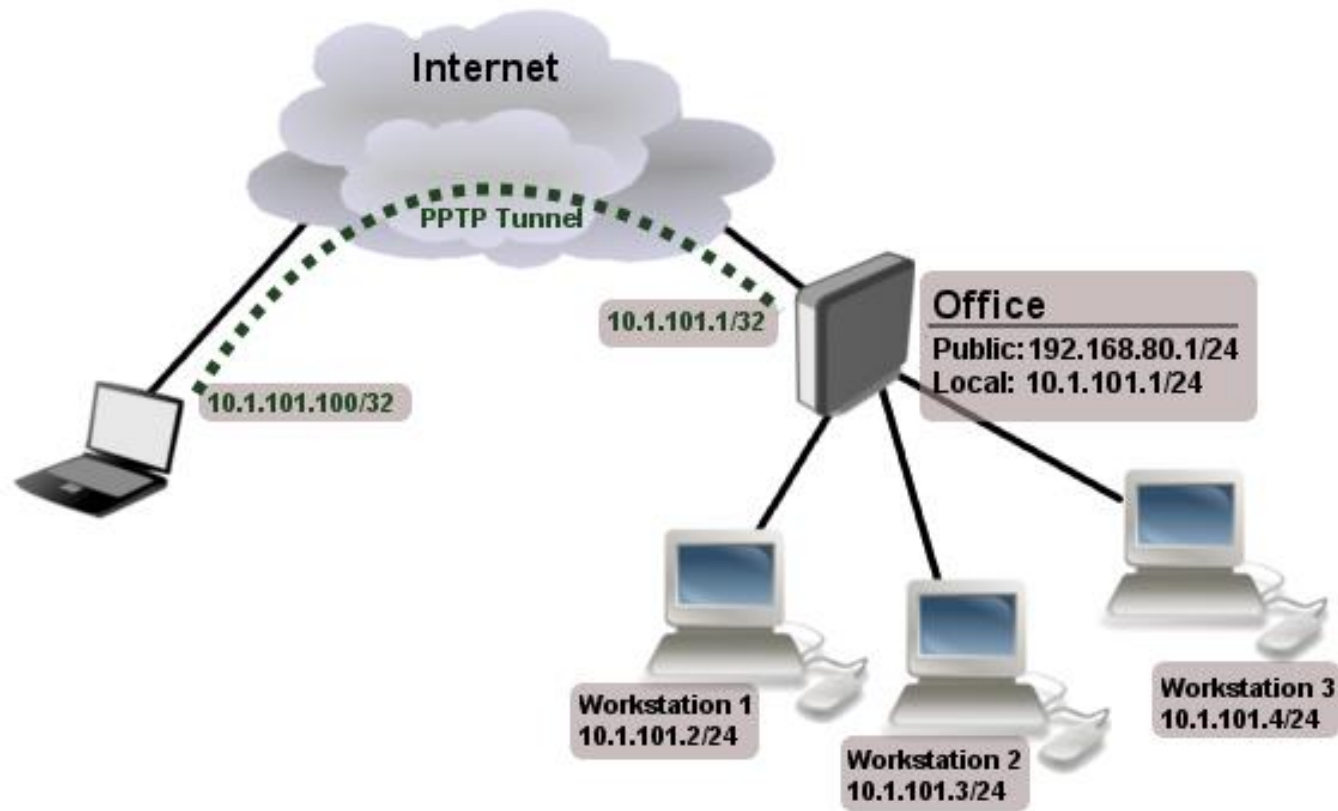
MikroTik

1) Múltiples opciones de VPN

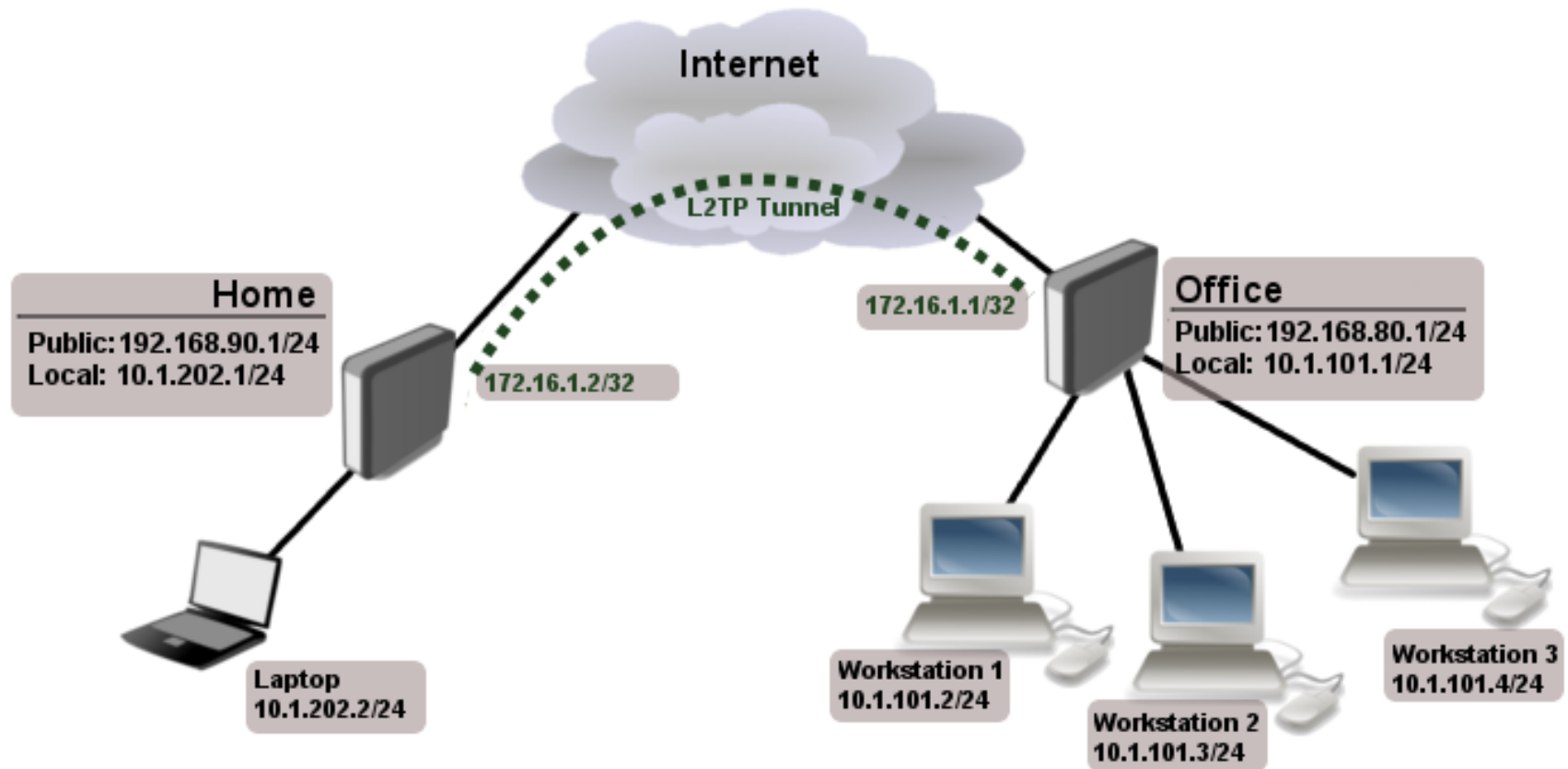


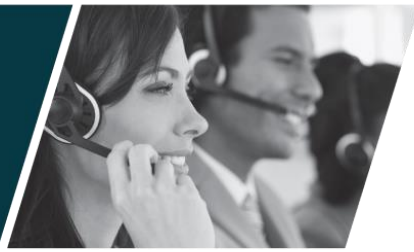
fuelle: <https://es.vpnmentor.com/blog/comparacion-de-protocolos-de-vpn-pptp-vs-l2tp-vs-openvpn-vs-sspt-vs-ikev2/>

2) Conexión cliente - Servidor



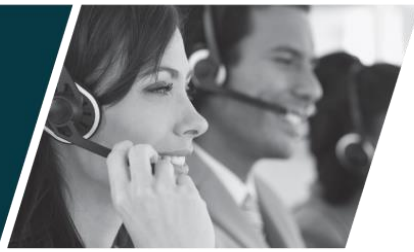
3) Site to Site





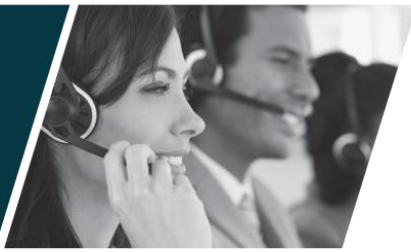
¿PREGUNTAS?





LINKS DE REFERENCIA

- <https://wiki.mikrotik.com/wiki/Manual:Queue>
- [https://wiki.mikrotik.com/wiki/Manual:Queues - PCQ](https://wiki.mikrotik.com/wiki/Manual:Queues_-_PCQ)
- <https://wiki.mikrotik.com/wiki/Manual:System/Backup>
- <https://wiki.mikrotik.com/wiki/Tunnels>
- <https://axiomcyber.com/shield/>



Los esperamos en Colombia!!!



Gracias

