

Tips para Principiantes

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23 de Enero de 2017

Bogotá - Colombia





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- ❖ Consultora en Telecomunicaciones
- ❖ Establecida en 2008
- ❖ Certificada en **ISO 9001:2015**
 - ❖ Entrenamientos Oficiales
 - ❖ Soporte IT



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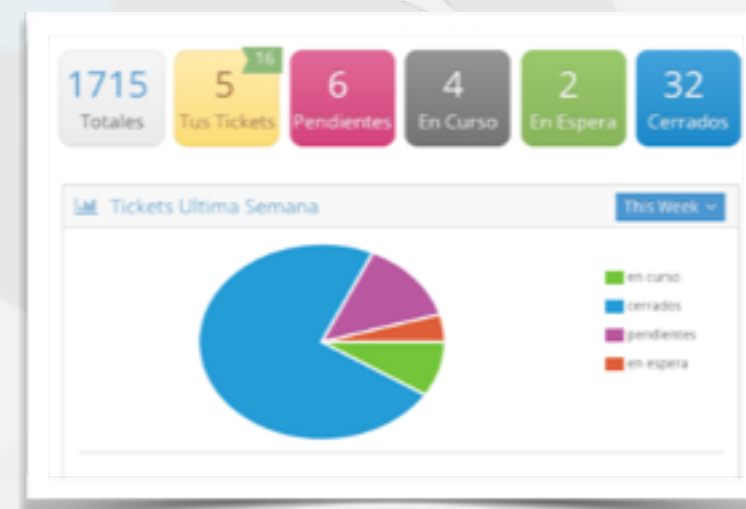
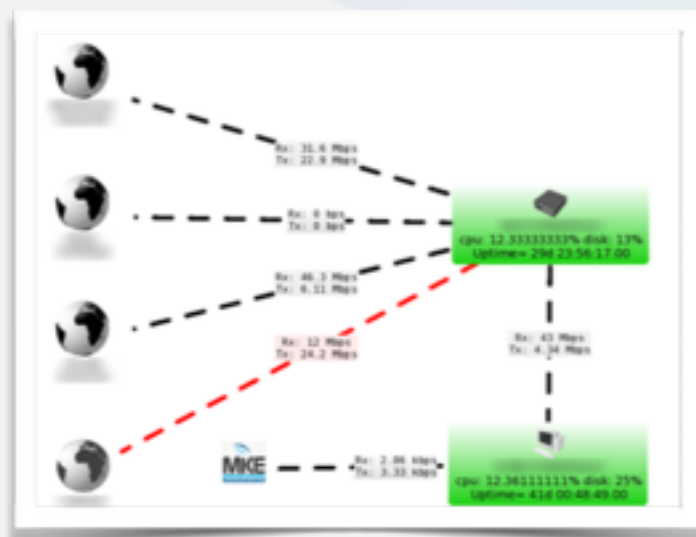
❖ Certificaciones Disponibles



❖ Entrenamientos Públicos y Privados.

❖ ~300 alumnos por año, con un 75% de certificados.

- ❖ Diseño, desarrollo e implementación de soluciones.
- ❖ Incidencias puntuales.
- ❖ Soporte mensual (OutSourcing).
 - ❖ Revisión y Optimización
 - ❖ Actualización
 - ❖ Mantenimiento preventivo
 - ❖ Monitoreo
 - ❖ Asesoramiento
 - ❖ Soporte Prioritario
 - ❖ Guardia 24x7
 - ❖ Implementaciones Adicionales



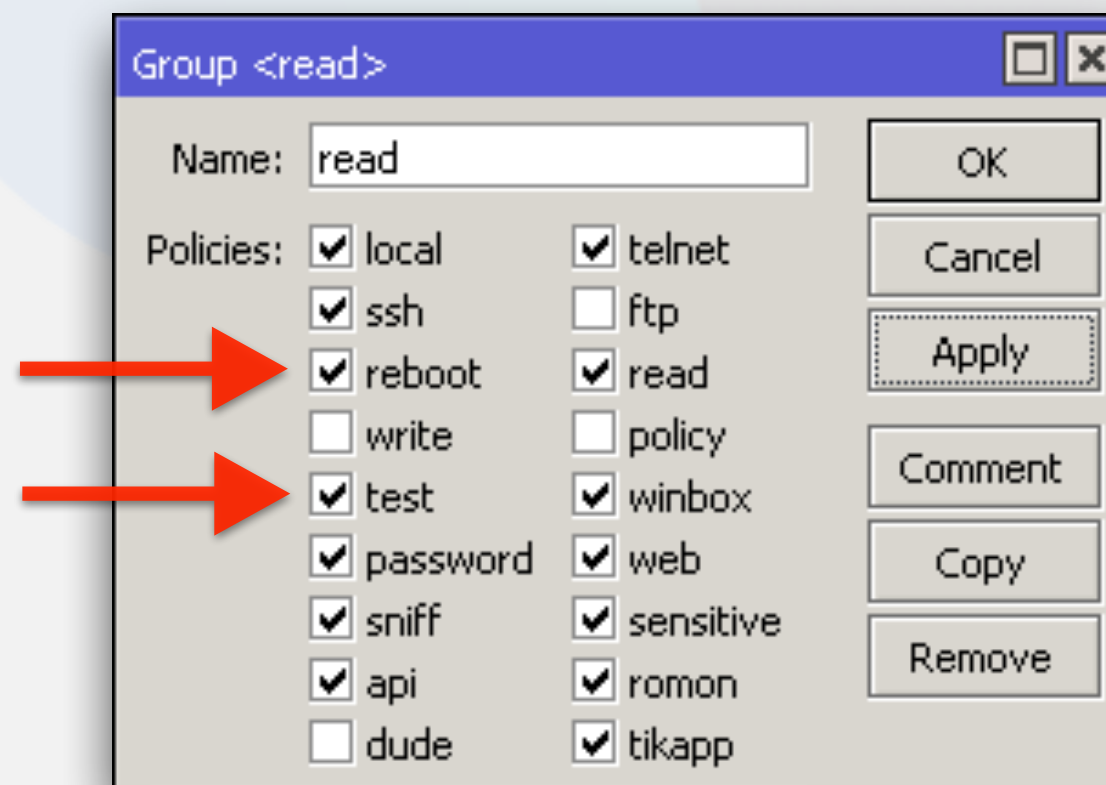


¿Quiénes somos principiantes?

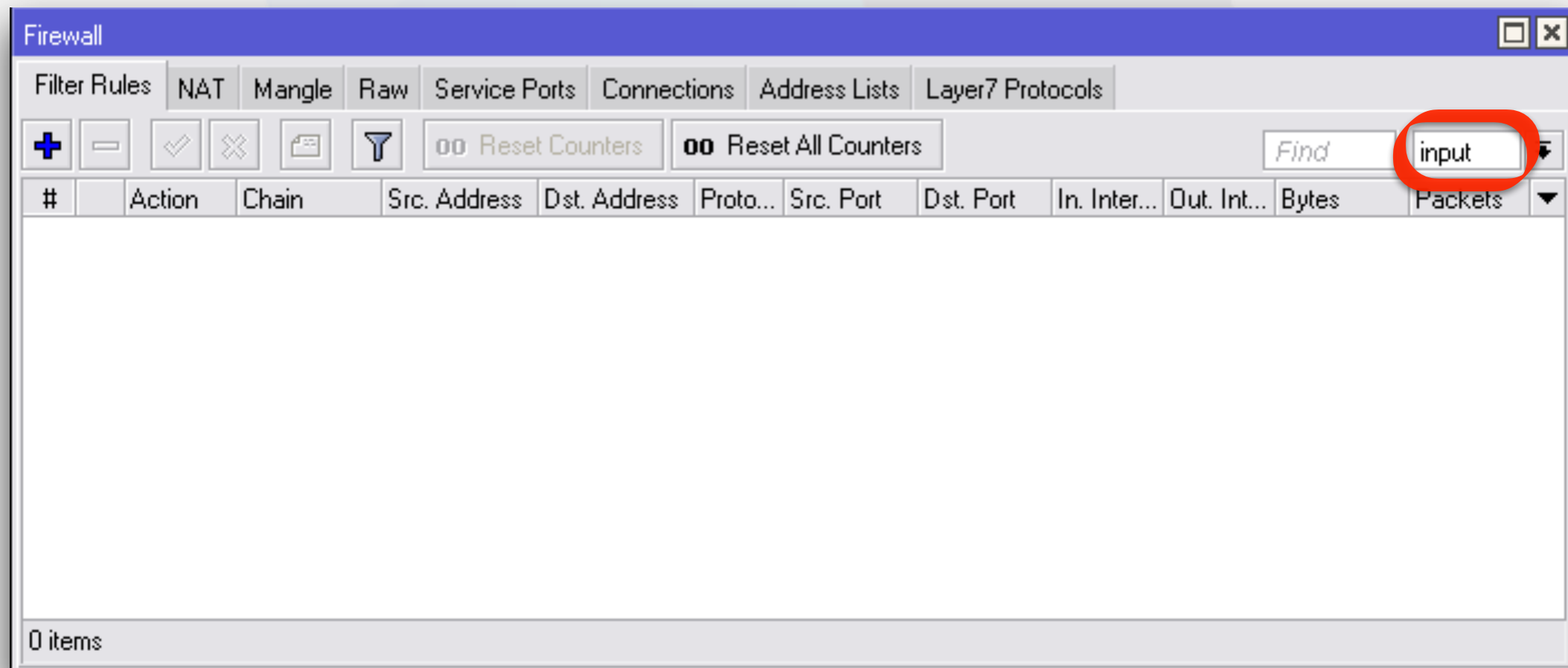
RouterOS es una herramienta MUY poderosa y sobre todo demasiado amplia, pero como en todos los casos, hay que saber configurarlo correctamente.

- ❖ Mostrar los descuidos mas comunes que encuentro cuando los clientes solicitan un relevamiento.
- ❖ Demostrar que con “unos pocos clics” se pueden mejorar las configuraciones, incrementando la seguridad y reduciendo las posibles fallas.

- ❖ Hay situaciones en las que se descuidan los accesos por default, dejando la puerta completamente abierta para ingresar al router con las credenciales por defecto.
- ❖ A veces, la única medida es poner el usuario admin en el perfil **read** y crear un nuevo usuario y contraseña con permisos FULL.
- ❖ *El grupo por defecto del usuario de sólo lectura tiene los permisos de REBOOT y TEST.*



- ❖ Una de las primeras acciones a realizar en todo equipo es poner al menos un pequeño firewall para prevenir los ataques más comunes.
- ❖ Los ataques tienen principalmente 2 objetivos: ***tomar el control del router*** o simplemente ***provocarle una denegación de servicios*** (CPU al 100%, consumo de todo el ancho de banda, etc).



Al no tener un firewall por defecto, todos los servicios están disponibles por todas sus interfaces, incluso la pública.

❖ **SSH** y **Telnet** son los más usados para conseguir acceso por fuerza bruta.

❖ **WEB** y **Winbox** son menos frecuentes, pero también ocurren.

all		
Jan/09/1970 23:08:56	system error critical	login failure for user identd from 187.141.13.251 via ssh
Jan/09/1970 23:08:59	system error critical	login failure for user gnats from 187.141.13.251 via ssh
Jan/09/1970 23:09:01	system error critical	login failure for user jeff from 187.141.13.251 via ssh
Jan/09/1970 23:09:04	system error critical	login failure for user irc from 187.141.13.251 via ssh
Jan/09/1970 23:09:09	system error critical	login failure for user list from 187.141.13.251 via ssh
Jan/09/1970 23:09:12	system error critical	login failure for user eleve from 187.141.13.251 via ssh
Jan/09/1970 23:09:16	system error critical	login failure for user proxy from 187.141.13.251 via ssh
Jan/09/1970 23:09:20	system error critical	login failure for user sys from 187.141.13.251 via ssh
Jan/09/1970 23:09:23	system error critical	login failure for user zzz from 187.141.13.251 via ssh
Jan/09/1970 23:09:27	system error critical	login failure for user tech from 187.141.13.251 via ssh
Jan/09/1970 23:09:30	system error critical	login failure for user frank from 187.141.13.251 via ssh

DNS Settings

Servers: 8.8.8.8

Dynamic Servers: 192.168.10.1
10.200.200.21

☒ Allow Remote Requests

Max UDP Packet Size: 4096

Query Server Timeout: 2.000

Query Total Timeout: 10.000

Max. Concurrent Queries: 100

Max. Concurrent TCP Sessions: 20

Cache Size: 2048 K

Cache Max TTL: 7d 00:00:00

Cache Used: 10

Torch (Running)

Interface: wan

Entry Timeout: 00:00:03 s

Filters

Src. Address: 0.0.0.0/0

Dst. Address: 0.0.0.0/0

Src. Address6: ::/0

Dst. Address6: ::/0

MAC Protocol: all

Protocol: any

Port: dns

VLAN Id: any

Collect

☒ Src. Address ☒ Src. Address6

☒ Dst. Address ☒ Dst. Address6

☐ MAC Protocol ☒ Port

☐ Protocol ☐ VLAN Id

Et...	Prot...	Src.	Dst.	VLAN Id	Tx Rate	Rx Rate	Tx Pack...	Rx Pack
800 (ip)		115.238.184.126:12633	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.125:26701	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:43549	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.125:16379	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.109:17231	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.110:20153	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.125:50075	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:55531	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:62555	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:34379	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:48267	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.109:58126	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.110:24377	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:26973	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:43181	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:48380	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.109:14222	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.126:17981	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		115.238.184.125:49099	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.109:9467	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.109:42021	:53 (dns)		6.0 kbps	344 bps	0	
800 (ip)		101.71.74.109:62197	:53 (dns)		6.0 kbps	344 bps	0	

Total Tx: 724.7 kbps Total Rx: 176.6 kbps Total Tx Packet: 2 Total Rx Packet: 2



Google Sorry...

We're sorry...

... but your computer or network may be sending automated queries. To protect our users, we can't process your request right now.

See [Google Help](#) for more information.

Para continuar, ingresa los siguientes caracteres:



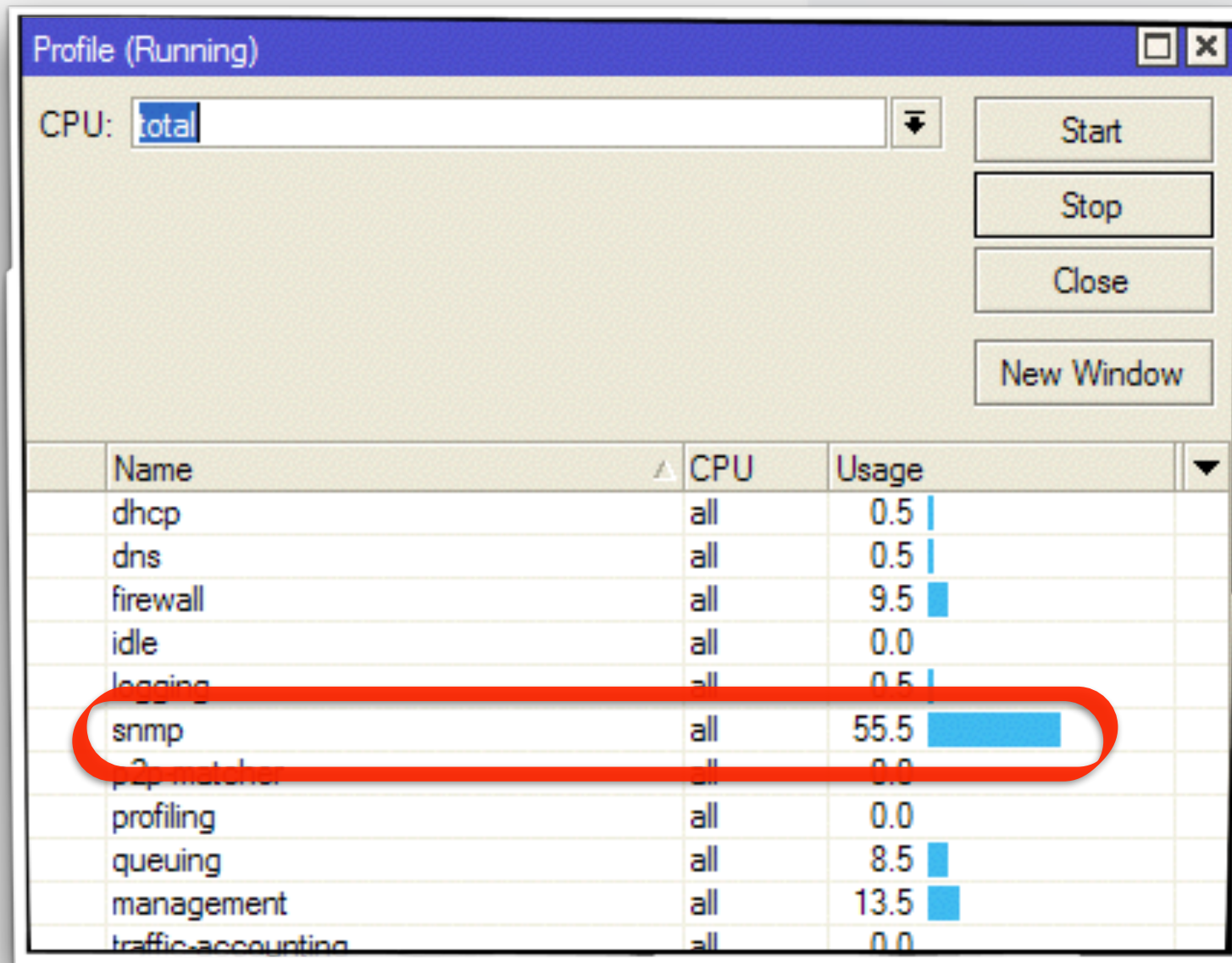
Acerca de esta página

Nuestros sistemas han detectado un tráfico inusual en tu red de equipo. Esta página verifica si realmente eres tú el que envía las solicitudes y no un robot. [¿Por qué sucedió esto?](#)

Ataques por SNMP



Al habilitar el servicio de **SNMP**, por defecto el router queda expuesto a cualquier consulta por cualquiera de sus interfaces.



SNMP Community <public>

Name:

Addresses:

Security:

☒ Read Access

☐ Write Access

Authentication Protocol:

Encryption Protocol:

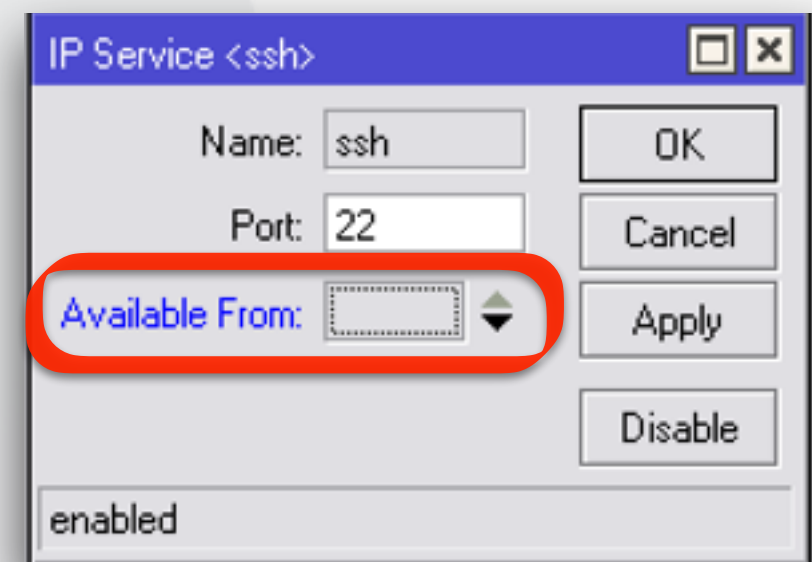
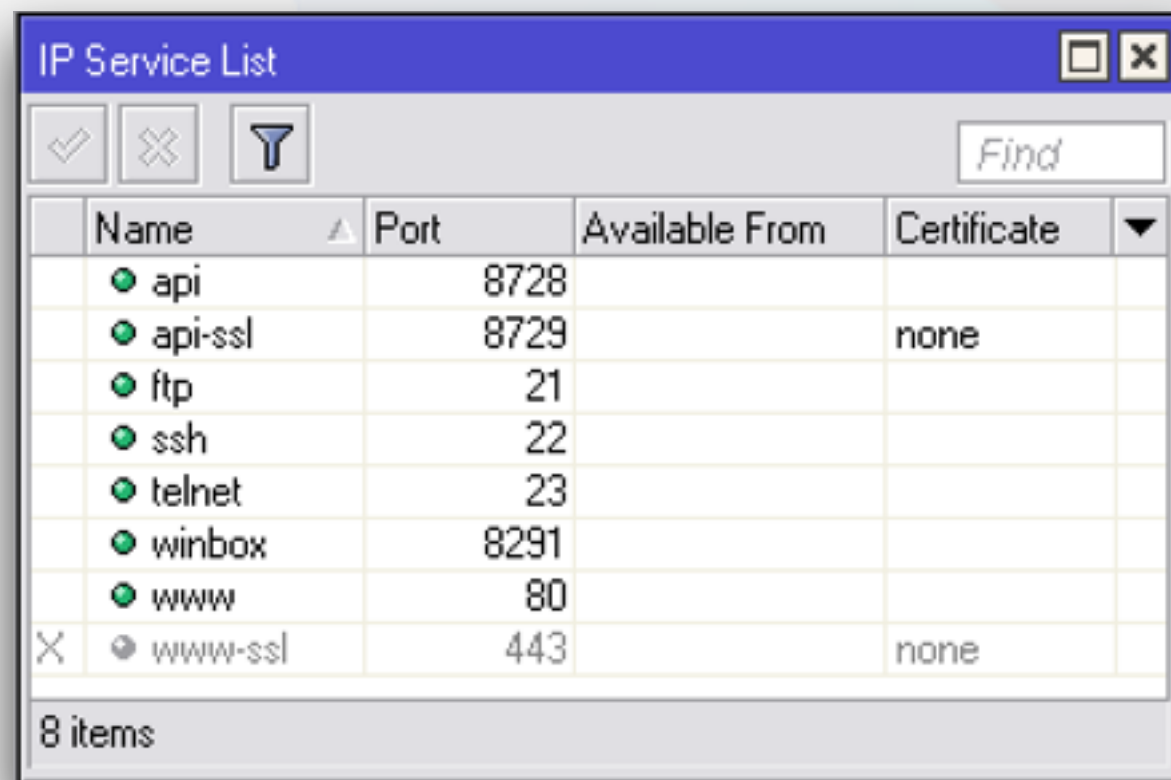
Authentication Password:

Encryption Password:

default

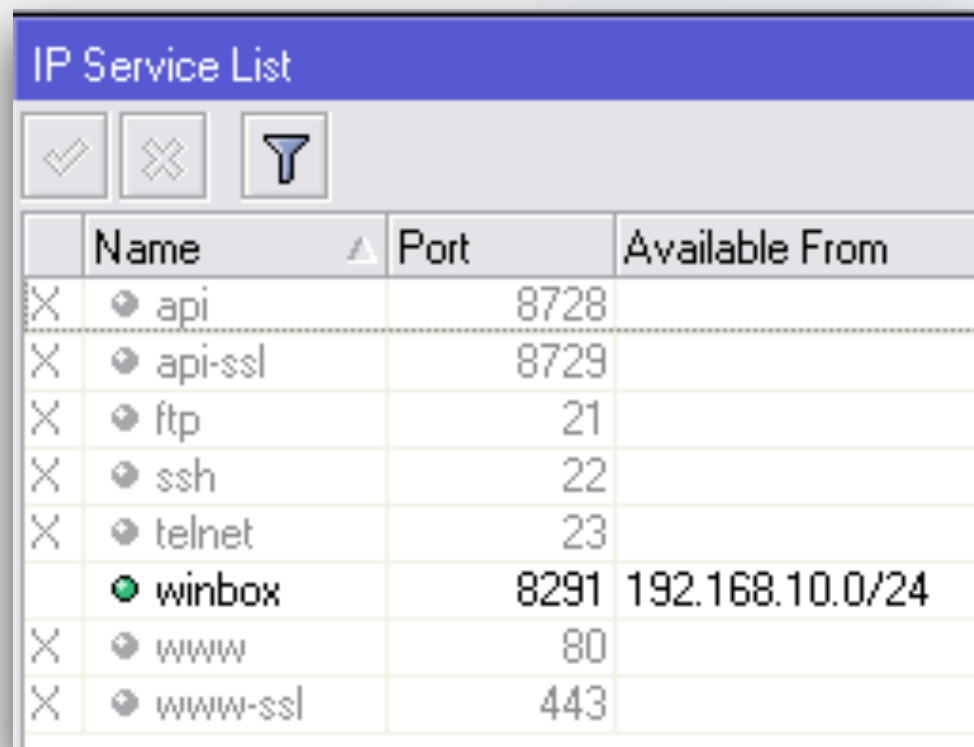
MIKE
solutions

- ❖ Una manera simple de protegerse, es deshabilitando los servicios que no se usen y proteger los demás con reglas de *firewall* o especificar el rango de direcciones IP desde la opción de *IP > Service*



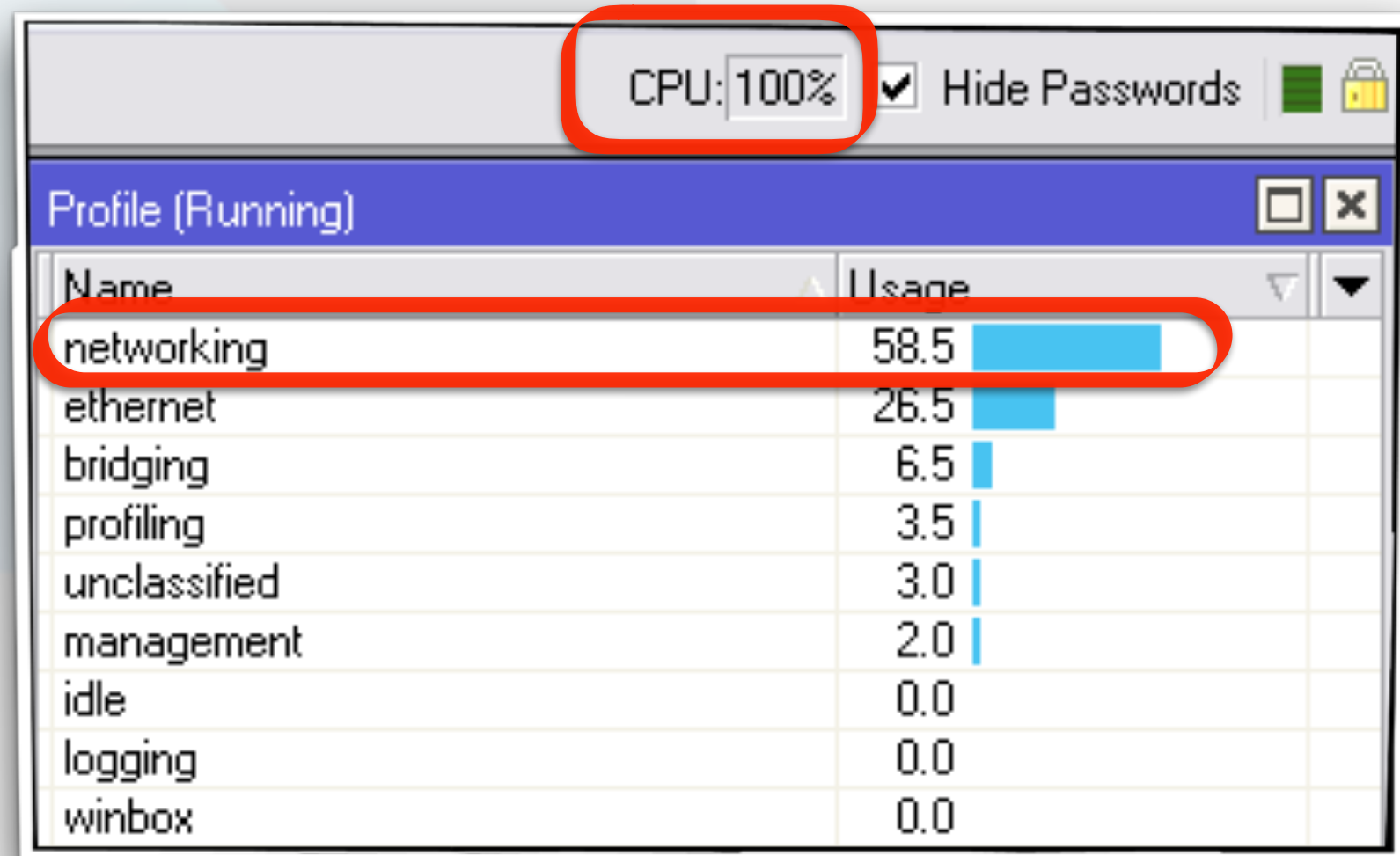
Tener deshabilitados todos los servicios no garantiza que el router esté 100% protegido.

❖ El protocolo **ICMP** mal usado, puede elevar el consumo del CPU y provocar denegación de servicio > **Ping Flooding**.



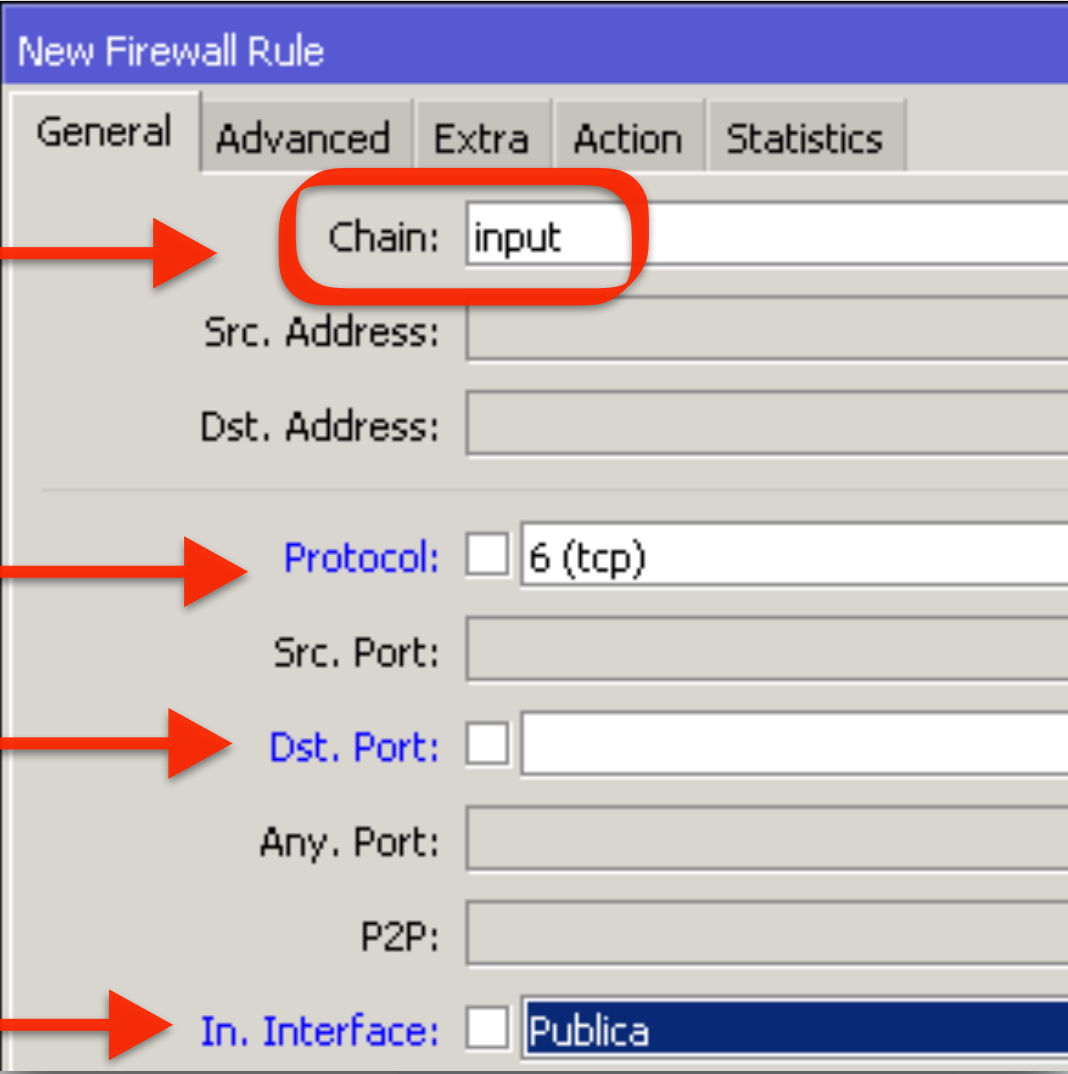
IP Service List

	Name	Port	Available From
X	api	8728	
X	api-ssl	8729	
X	ftp	21	
X	ssh	22	
X	telnet	23	
	winbox	8291	192.168.10.0/24
X	www	80	
X	www-ssl	443	



Profile (Running)

Name	Usage
networking	58.5
ethernet	26.5
bridging	6.5
profiling	3.5
unclassified	3.0
management	2.0
idle	0.0
logging	0.0
winbox	0.0



New Firewall Rule

General Advanced Extra Action Statistics

Chain: **input**

Src. Address:

Dst. Address:

Protocol: ☐ 6 (tcp)

Src. Port:

Dst. Port: ☐

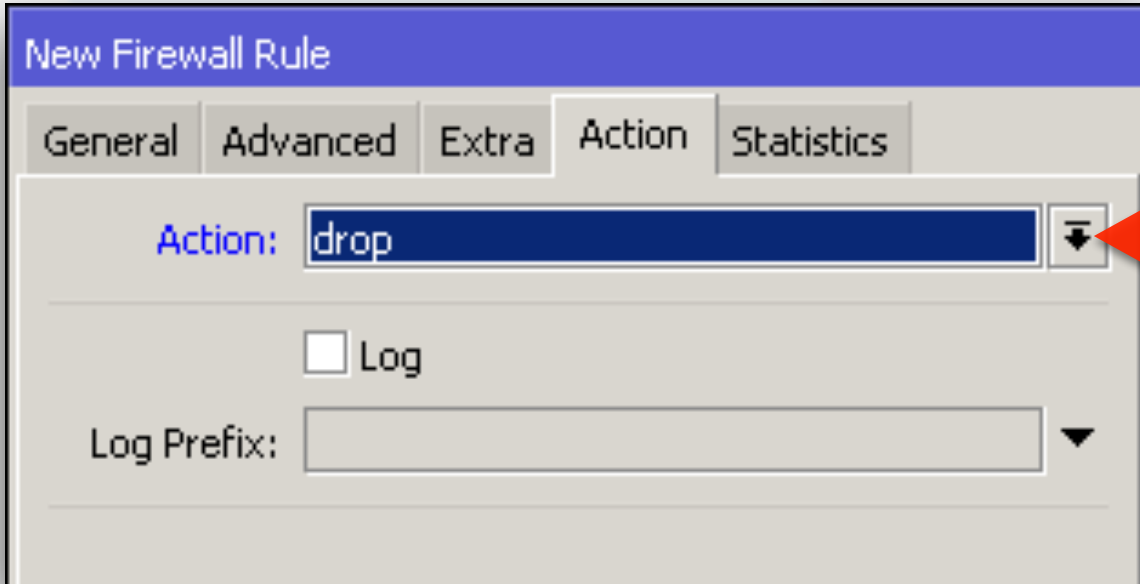
Any. Port:

P2P:

In. Interface: ☐ Publica

Four red arrows point to the Chain, Protocol, Dst. Port, and In. Interface fields.

- ❖ *SSH*: TCP 22
- ❖ *Telnet*: TCP 23
- ❖ *WEB*: TCP 80
- ❖ *Winbox*: TCP 8291
- ❖ *WebProxy*: TCP 8080
- ❖ *DNS*: UDP 53
- ❖ *SNMP*: UDP 161



New Firewall Rule

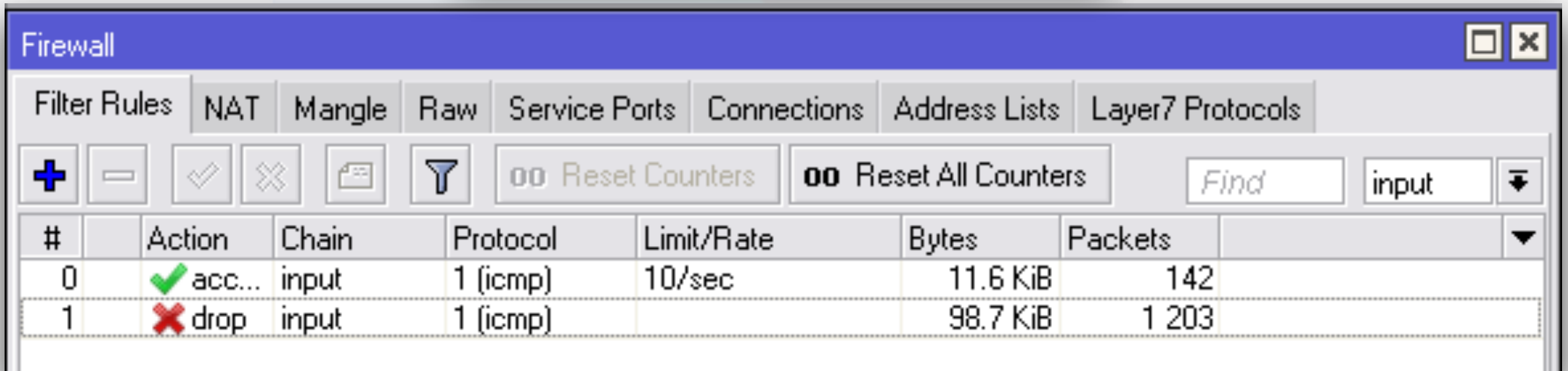
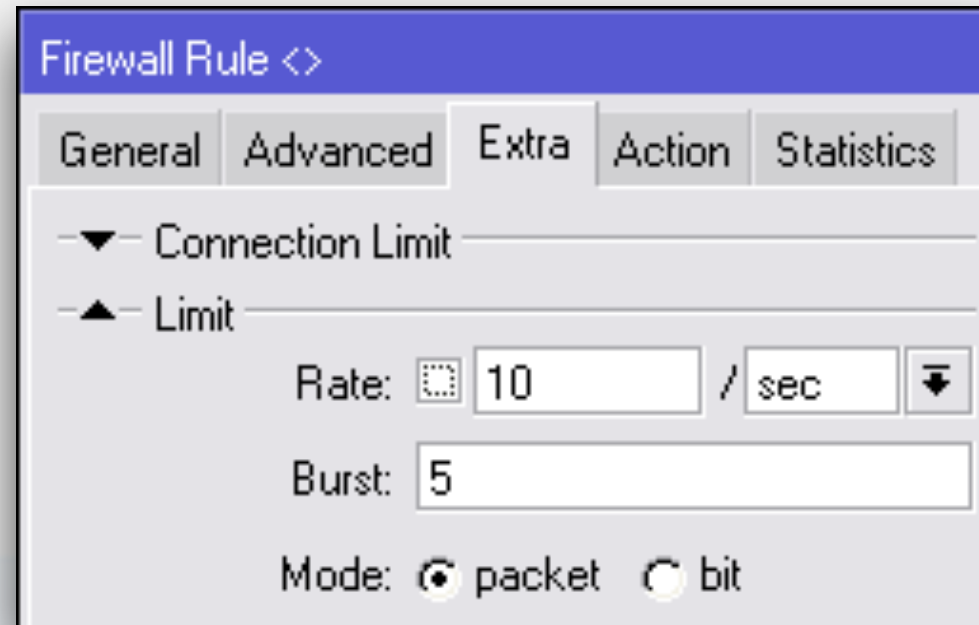
General Advanced Extra Action Statistics

Action: **drop**

☐ Log

Log Prefix:

A red arrow points to the dropdown arrow next to the Action field.



Firewall

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

+ - ✓ ✗ 

#	Action	Chain	Protocol	Limit/Rate	Bytes	Packets
0	✓ acc...	input	1 (icmp)	10/sec	11.6 KiB	142
1	✗ drop	input	1 (icmp)		98.7 KiB	1 203

```
/ip firewall filter
```

```
add action=accept chain=input limit=10,5:packet protocol=icmp
```

```
add action=drop chain=input protocol=icmp
```



- ❖ Bloquear en el router principal el tráfico de download que no vaya con destino a nuestras propias direcciones IP (forward).
- ❖ Bloquear en el router principal el tráfico de upload que no venga con destino desde nuestras propias IP (forward).
- ❖ En caso de dar IP publicas, bloquear (o limitar) los servicios mas vulnerables para evitar ataques de amplificación (DNS, NTP, SNMP).



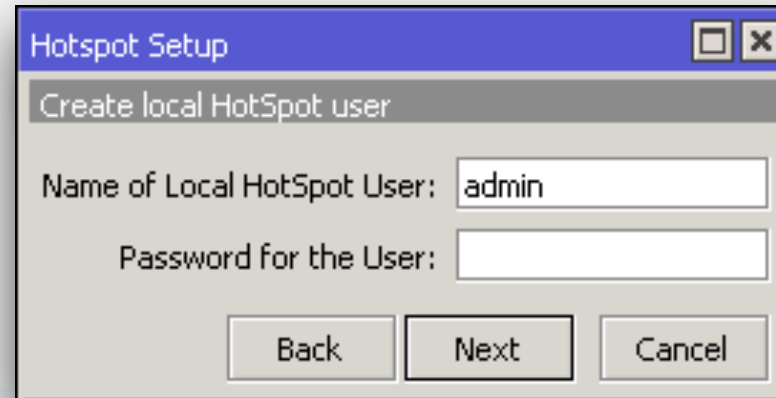
mum Servicios Principales a proteger



<i>Puerto</i>	<i>Protocolo</i>	<i>Comentario</i>
20,21	TCP	FTP
22	TCP	SSH, SFTP
23	TCP	TELNET
53	TCP/UDP	DNS
80	TCP	HTTP
123	UDP	NTP
161,162	UDP	SNMP
179	TCP	BGP
443	TCP	HTTPS /(HotSpot)

<i>Puerto</i>	<i>Protocolo</i>	<i>Comentario</i>
2000	TCP	Bandwidth Server
3128,8080	TCP	WebProxy
5678	UDP	Neighbour Discovery
8291	TCP	WinBox
8728	TCP	API
	I	ICMP
1701	UDP	L2tP
1723	TCP	PPtP
1812,1813	UDP	User Manager

- ❖ No dejar el usuario “admin” del hotspot sin contraseña!



Hotspot Setup

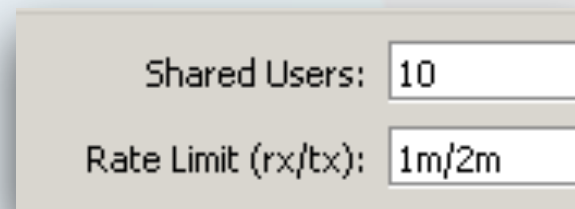
Create local HotSpot user

Name of Local HotSpot User: admin

Password for the User:

Back Next Cancel

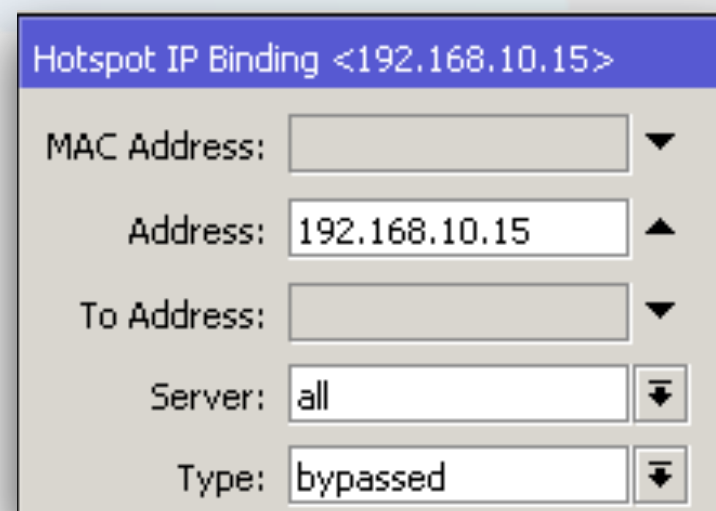
- ❖ El campo “shared-users” del perfil de hotspot permite que el mismo usuario pueda usarse en simultáneo N veces, pero cada uno tiene su propia queue!



Shared Users: 10

Rate Limit (rx/tx): 1m/2m

- ❖ El *bypass* oculta el hotspot, pero no controla el ancho de banda!



Hotspot IP Binding <192.168.10.15>

MAC Address:

Address: 192.168.10.15

To Address:

Server: all

Type: bypassed

- ❖ *MNDP* está habilitado en todas sus interfaces.

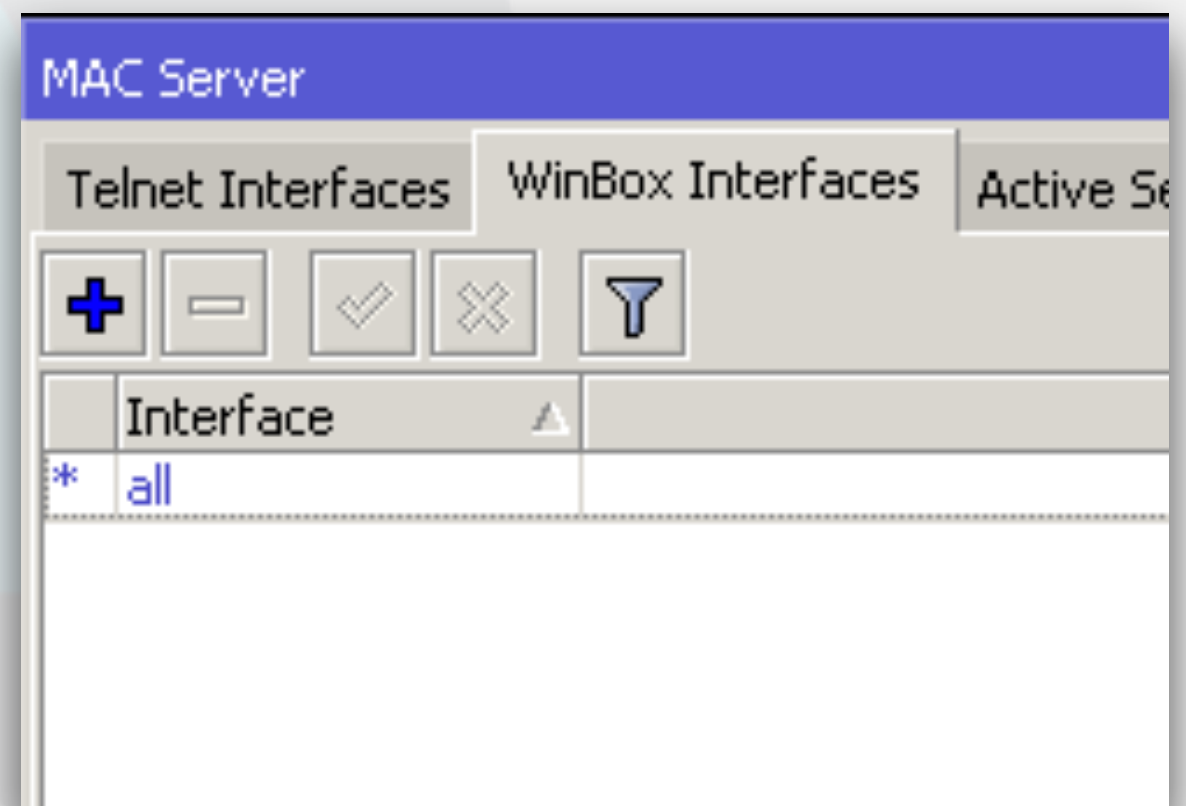
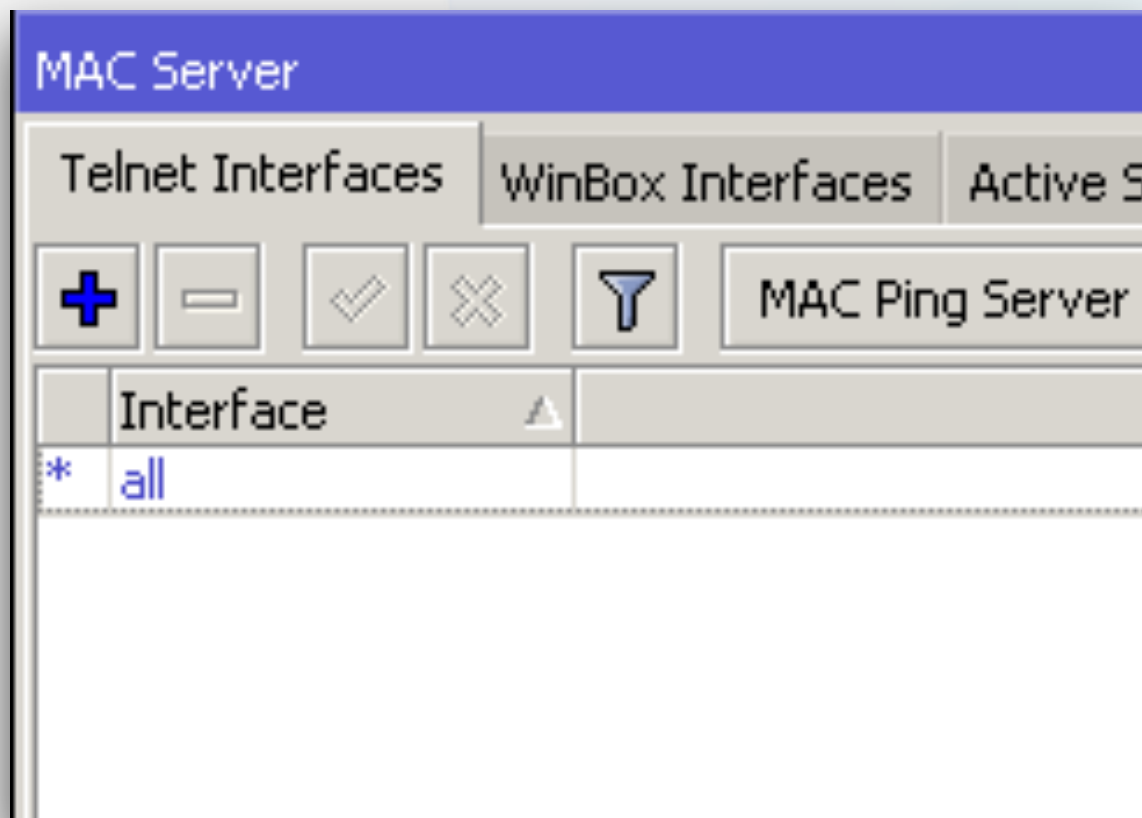
Managed Neighbors				
 Refresh Find				
MAC Address	IP Address	Identity	Version	Board
00:1C:42:53:CD:36	192.168.10.10	MikroTik	6.38 (stable)	x86
D4:CA:6D:88:E1:B7	192.168.10.211	Portero IP	6.36.3 (stable)	RBmAP2n
E4:8D:8C:0A:4E:37	192.168.10.1	Router Core by MKE Solutions	6.37.1 (stable)	RB3011UiAS

- ❖ *Ip > Neighbors*

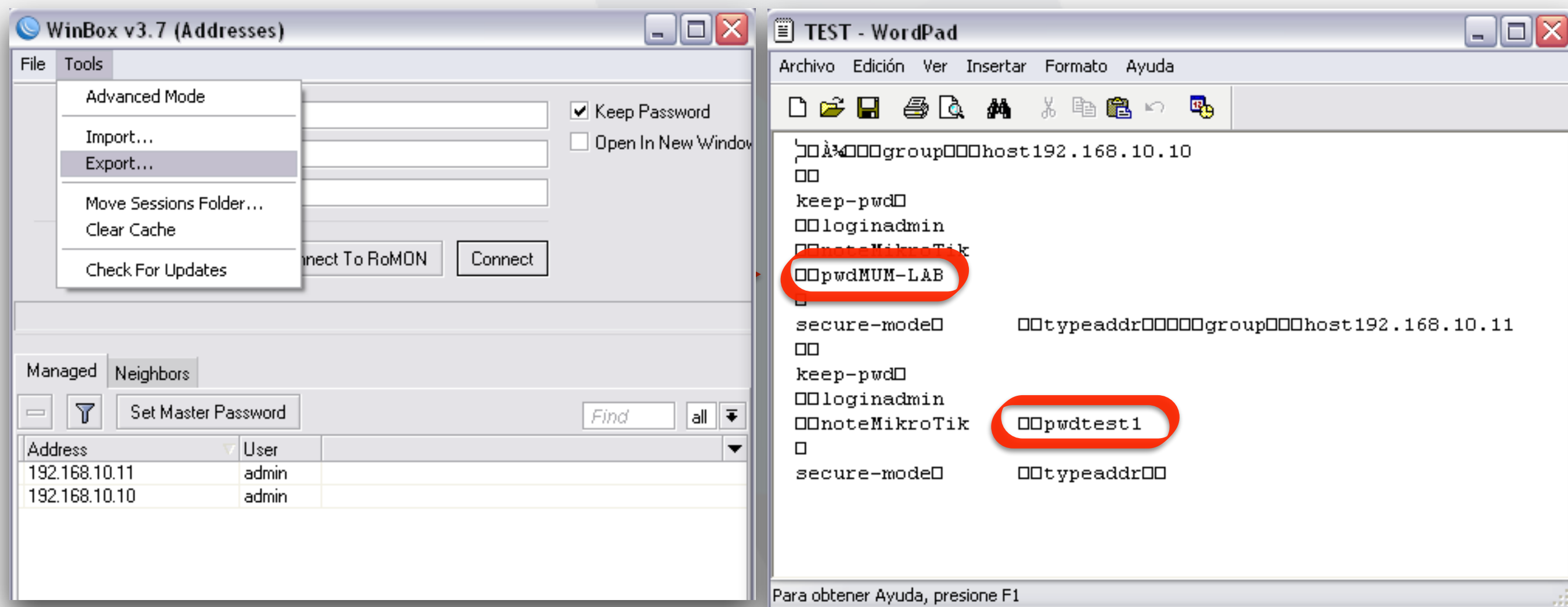
Neighbor List	
Neighbors Discovery Interfaces	
  	
Interface	
 Local	
 Publica	
 ether1	
 ether2	
 ether3	
 ether4	
 wlan1	

Aún deshabilitando el “Discovery Interface” se puede acceder por *Mac-Telnet* y *Mac-Winbox* sabiendo la **MAC** del equipo.

❖ Para cerrar el acceso en capa 2: *Tools > Mac Server*



Si están guardados los accesos dentro del Winbox, fácilmente se puede exportar una lista y ver la contraseña con cualquier editor de texto!!!



The image shows two windows side-by-side. The left window is 'WinBox v3.7 (Addresses)' and the right window is 'TEST - WordPad'.

WinBox v3.7 (Addresses) - Tools Menu:

- Advanced Mode
- Import...
- Export...
- Move Sessions Folder...
- Clear Cache
- Connect To RoMON
- Connect

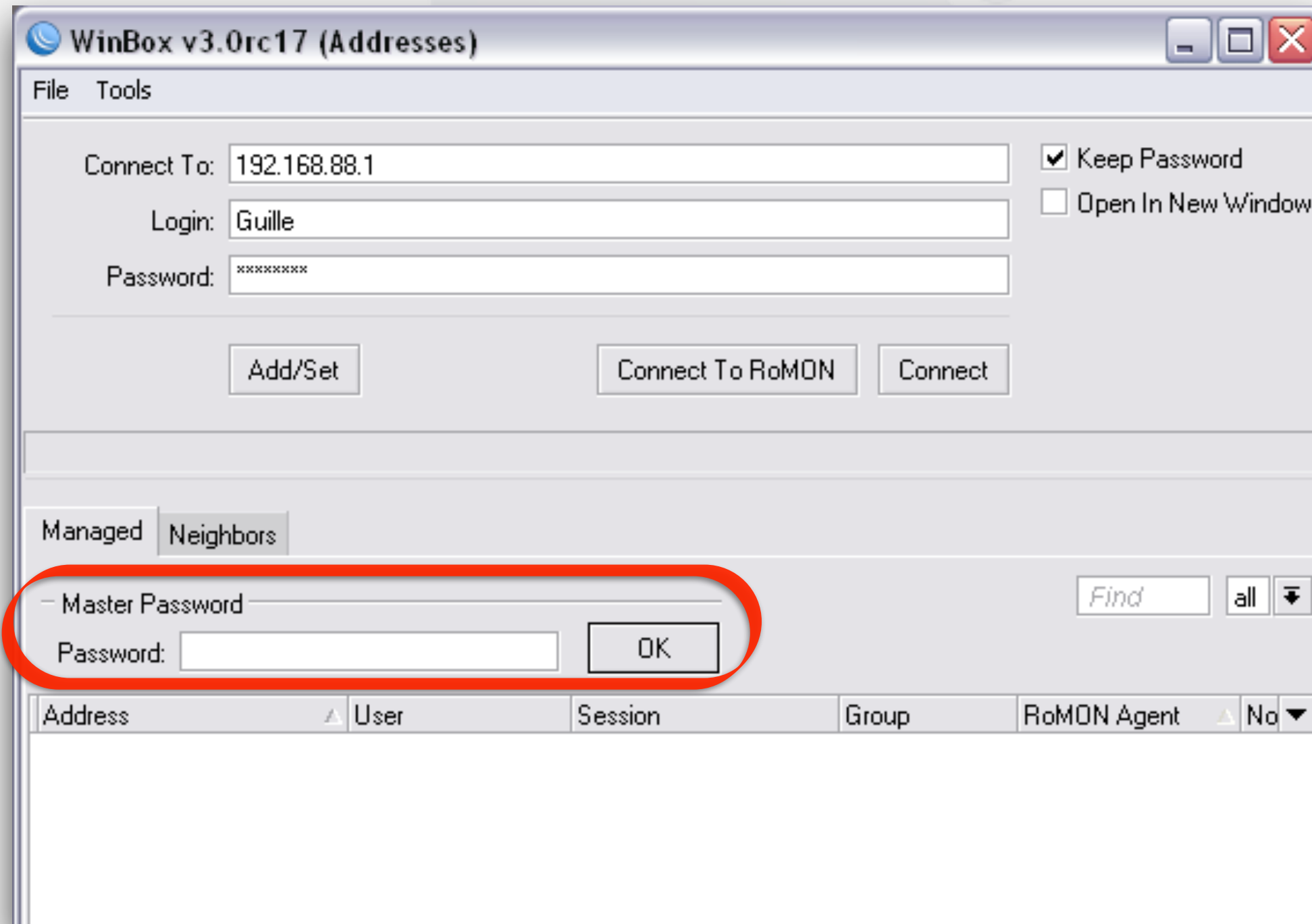
WinBox v3.7 (Addresses) - Managed Tab:

Address	User
192.168.10.11	admin
192.168.10.10	admin

TEST - WordPad - Content:

```
group host 192.168.10.10
keep-pwd
login admin
note MikroTik
pwd MUM-LAB
secure-mode type addr group host 192.168.10.11
keep-pwd
login admin
note MikroTik
pwd test1
secure-mode type addr
```

- ❖ En la versión 3, se puede setear un master password para que no muestre la lista y se pueda exportar.



The image shows a screenshot of the WinBox v3.0rc17 (Addresses) window. The window has a menu bar with 'File' and 'Tools'. Below the menu bar, there are three input fields: 'Connect To:' with the value '192.168.88.1', 'Login:' with the value 'Guille', and 'Password:' with the value 'xxxxxxx'. To the right of these fields are two checkboxes: 'Keep Password' (checked) and 'Open In New Window' (unchecked). Below these fields are three buttons: 'Add/Set', 'Connect To RoMON', and 'Connect'. Below the buttons, there are two tabs: 'Managed' and 'Neighbors'. Below the tabs, there is a section for setting a master password. It includes a label 'Master Password', a text input field, and an 'OK' button. This section is highlighted with a red oval. To the right of this section is a 'Find' search bar with a dropdown menu showing 'all' and a search icon. At the bottom of the window, there is a table with columns: 'Address', 'User', 'Session', 'Group', 'RoMON Agent', and 'No'. The table is currently empty.

Address	User	Session	Group	RoMON Agent	No
---------	------	---------	-------	-------------	----



- ❖ NUNCA actualizar porque si.
- ❖ Leer changelog y las experiencias en el foro de MikroTik

Release 6.38

2017-01-02

What's new in 6.38 (2016-Dec-30 11:33):

Important note!!!

RouterOS v6.38 contains STP/RSTP changes which makes bridges compatible with IEEE 802.1Q-2014 by sending and processing BPDU packets without VLAN tag.

To avoid STP/RSTP compatibility issues with older RouterOS versions, upgrade RouterOS to v6.38 on all routers in Layer2 networks with VLAN and STP/RSTP configurations.

The recommended procedure is to start by upgrading the remotest routers and gradually do it to the Root Bridge device.

If after upgrade you experience loss of connectivity, then disabling STP/RSTP on RouterOS bridge interface will restore connectivity so you can complete upgrade process on your network.

**v6.38 [current] is released!**

Posted by **strods**, Mon Jan 02, 2017 3:41 pm » in [Announcements](#)

14,526 views

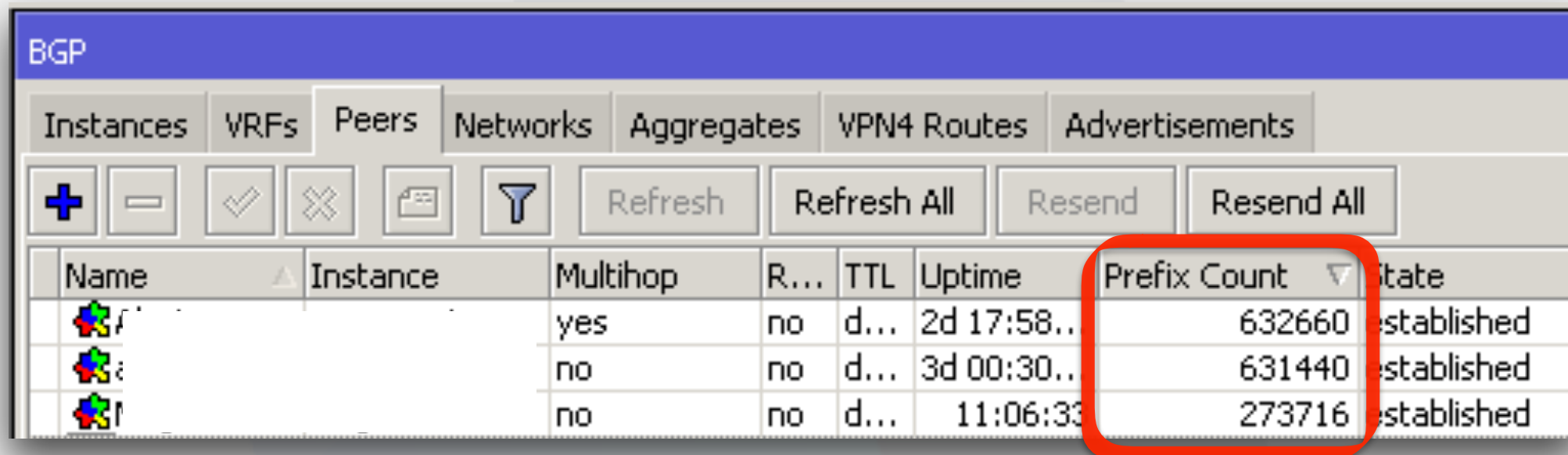


159

macgaiver

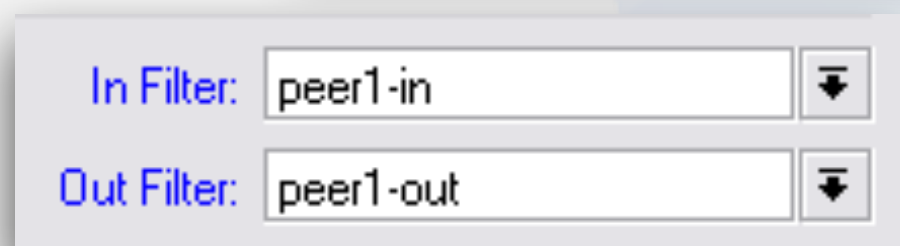
Wed Jan 11, 2017 7:32 pm

- ❖ Usar filtros para evitar recibir publicaciones indeseadas (in).
- ❖ Usar filtros para evitar convertirse en tránsito (out).



The image shows a screenshot of a BGP configuration window. The 'Peers' tab is selected. Below the tabs are several action buttons: '+', '-', '✓', '✗', a folder icon, a funnel icon, 'Refresh', 'Refresh All', 'Resend', and 'Resend All'. A table lists BGP peers with columns: Name, Instance, Multihop, R..., TTL, Uptime, Prefix Count, and State. The 'Prefix Count' column is highlighted with a red box. Three peers are listed, all with a state of 'established'.

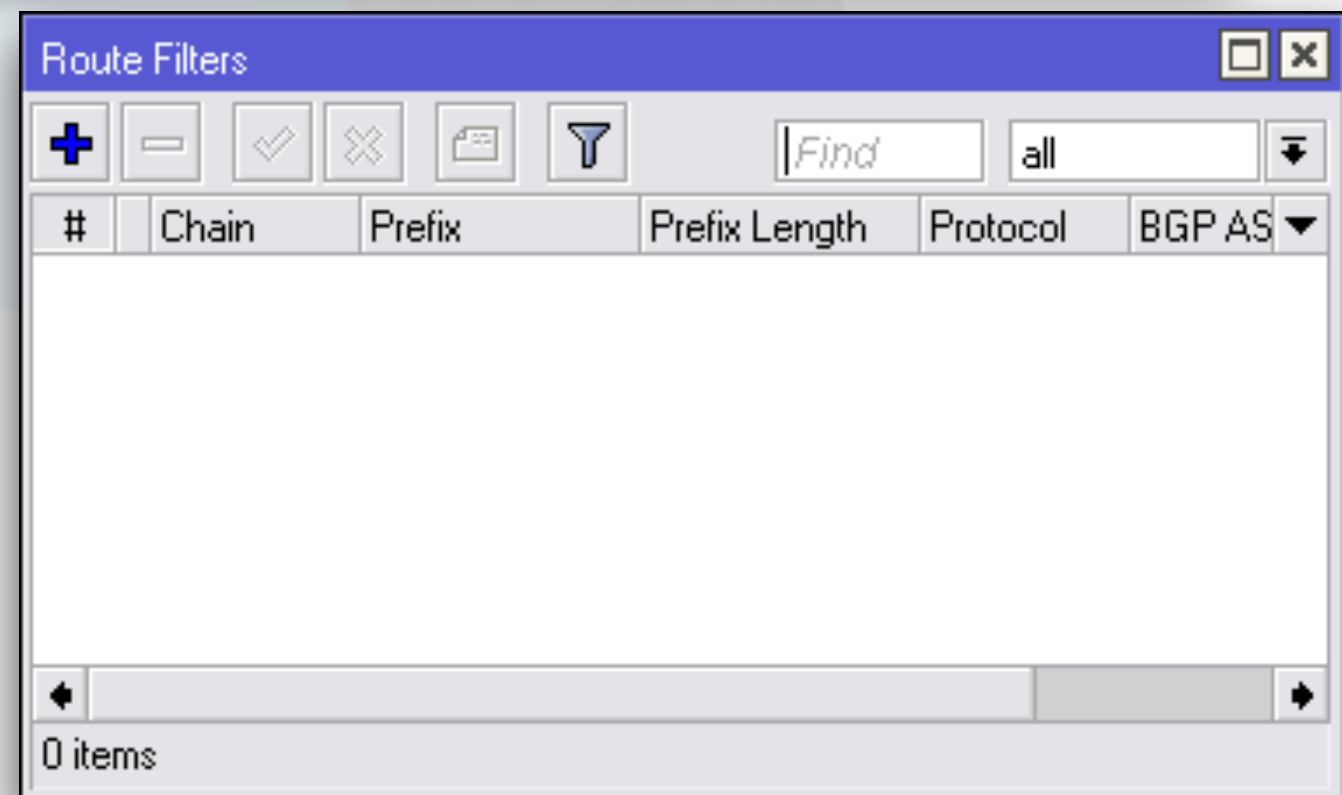
Name	Instance	Multihop	R...	TTL	Uptime	Prefix Count	State
		yes	no	d...	2d 17:58..	632660	established
		no	no	d...	3d 00:30..	631440	established
		no	no	d...	11:06:33	273716	established



A small dialog box for configuring filters. It has two input fields: 'In Filter:' with the value 'peer1-in' and 'Out Filter:' with the value 'peer1-out'. Each field has a dropdown arrow to its right.

In Filter: peer1-in

Out Filter: peer1-out



The image shows a 'Route Filters' window. It has a toolbar with buttons: '+', '-', '✓', '✗', a folder icon, a funnel icon, a 'Find' text box, and a dropdown menu currently set to 'all'. Below the toolbar is a table with columns: #, Chain, Prefix, Prefix Length, Protocol, and BGP AS. The table is currently empty. At the bottom, it says '0 items'.

#	Chain	Prefix	Prefix Length	Protocol	BGP AS
---	-------	--------	---------------	----------	--------

0 items

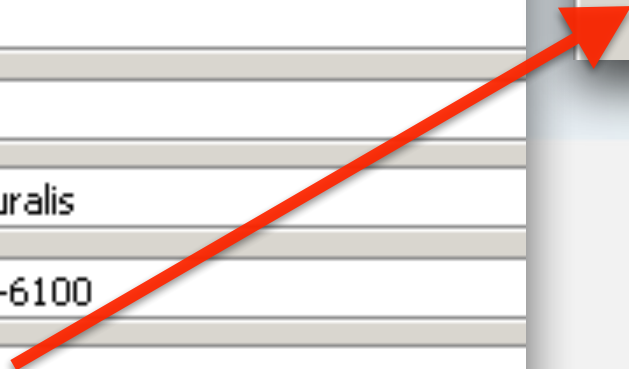
- ❖ El uso de Nv2 ignora la configuración del **security-profile**.
- ❖ La configuración de la llave compartida se hace desde la solapa de Nv2.
- ❖ En caso de no usarse, cualquier **RouterOS** puede enlazarse.

Interface <wlan1>

General	Wireless	Data Rates	Advanced	HT	HT MCS
Mode: bridge					
Band: 5GHz-only-N					
Channel Width: 20/40MHz Ce					
Frequency: 6030					
SSID: PEE					
Radio Name: AP Euralis					
Scan List: 4900-6100					
Wireless Protocol: nv2					
Security Profile:					

Interface <wlan1>

General	Wireless	Data Rates	Advanced	HT	HT MCS	WDS	Nstreme	NV2
TDMA Period Size: 2ms								
Cell Radius: 30								
☒ Security								
Preshared Key: *****								





Profile (Running)	
Name	Usage
idle	76.5
winbox	6.5
management	4.5
networking	3.0
firewall	2.0
ppp	2.0
dns	1.5
queuing	1.5
ethernet	1.0
unclassified	1.0
logging	0.5
bridging	0.0
flash	0.0
graphing	0.0
l2tp	0.0
p2p-matcher	0.0
profiling	0.0
routing	0.0
ssl	0.0
traffic-accounting	0.0

Torch (Running)

Basic

Interface: wan

Entry Timeout: 00:00:03 s

Collect

☒ Src. Address

☒ Dst. Address

☒ MAC Protocol

☒ Protocol

☒ DSCP

☒ Src. Address6

☒ Dst. Address6

☒ Port

☒ VLAN Id

Filters

Src. Address: 0.0.0.0/0

Dst. Address: 0.0.0.0/0

Src. Address6: ::/0

Dst. Address6: ::/0

MAC Protocol: all

Protocol: any

Port: any

VLAN Id: any

DSCP: any

Start

Stop

Close

New Window

Eth. ...	Pro...	Src.	Dst.	VLAN Id	DSCP	Tx Rate	Rx Rate	Tx Pack...	Rx Pack...
800 ...	6 (t...	184.107.141.20:9087	:51555			2.6 kbps	148.5 k...	5	14
806 ...						0 bps	39.8 kbps	0	83
800 ...	47	187.189.147.70				1760 bps	5.7 kbps	2	5
800 ...	6 (t...	64.233.186.125:5222	:64445			5.8 kbps	5.4 kbps	11	10
4 (8...						0 bps	1856 bps	0	2
800 ...	2 (i...	192.168.0.1			48	0 bps	1440 bps	0	3
800 ...	2 (i...	192.168.0.1			48	0 bps	1440 bps	0	3
800 ...	17 ...	8.8.4.4:53 (dns)	:53373			648 bps	1176 bps	1	1
800 ...	17 ...	190.104.143.50:1701 (l2tp)	:1701 (l2tp)			928 bps	976 bps	2	2
800 ...	47	179.60.254.46				496 bps	976 bps	1	2
800 ...	1 (i...	8.8.8.8				944 bps	944 bps	1	1
800 ...	6 (t...	190.0.22.98:51241	:3 (https)			592 bps	624 bps	1	1
800 ...	6 (t...	190.0.22.98:51893	:3 (https)			592 bps	624 bps	1	1
800 ...	17 ...	64.233.186.189:443 (htt...	:53224			528 bps	600 bps	1	1
800 ...	6 (t...	179.41.15.50:44292	:23 (pptp)			1184 bps	592 bps	2	1

191 items

Total Tx: 28.0 kbps

Total Rx: 222.0 kbps

Total Tx Packet: 50

Total Rx Packet: 152

Oct/30/2015 15:10:21	memory	system, info	changed snmp settings by admin
Oct/30/2015 15:27:05	memory	system, error, critical	login failure for user admin from 192.168.88.179 via winbox
Oct/30/2015 15:44:18	memory	system, info, account	user admin logged out from 192.168.10.4 via winbox
Oct/30/2015 15:47:11	memory	system, info, account	user admin logged in from 192.168.10.4 via winbox

❖ IP scan

❖ Packet Sniffer

❖ Mangle > TZCP

❖ Netflow / IPFIX / Port Mirror

❖ Add src / dst to address-list

IP Scan (Running)

Interface:

Address Range: 172.16.0.2

Address	MAC Address	Time (ms)	DNS
172.16.0.2	60:EB:69:B1:6E:32	17	
172.16.0.2	00:0C:42:8C:D2:D6	0	

2 items

New Mangle Rule

General Advanced Extra Action Statistics

Action: sniff TZSP

☐ Log

Log Prefix:

Sniff Target: 0.0.0.0

Sniff Target Port: 0

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists

+ - ✓ ✗  

	Name	Address	Timeout
D	Ataques SIP	66.240.192.138	00:22:22
D	Ataques SIP	66.240.236.119	00:35:58
D	Ataques SIP	71.6.135.131	00:31:02
D	Ataques SIP	71.6.146.185	00:05:46
D	Ataques SIP	71.6.158.166	00:32:01
D	Ataques SIP	83.35.66.73	00:42:28
D	Ataques SIP	134.119.215.49	00:06:11
D	Ataques SIP	158.69.53.12	00:57:38



- ❖ Leer!
- ❖ Implementar
- ❖ Fallar
- ❖ Volver a Leer
- ❖ Corregir
- ❖ Testear
- ❖ Documentar!

Main Page

Welcome to the MikroTik Wiki!

This is a place where users of MikroTik solutions share information, examples, howtos and ideas with each other.

This resource consists of both User Maintained How-To articles, and also MikroTik maintained documentation pages.

Choose your category below:



MikroTik RouterOS

Documentation



RouterBOARD hardware

RouterBOARD hardware Pages



MikroTik User Manager

MikroTik User Manager



RouterOS User Topics

Articles and Examples written by users



MikroTik News

News and related information



MUM Events

MikroTik User Meetings around the world



The Dude

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SwOS

SwOS for MikroTik Switch products

RouterOS

	RouterOS v6 RC and v7 BETA BETA Testing and Feature Suggestions for the next RouterOS release (ROS v7)	4,774 Topics	33,968 Posts
	Beginner Basics If you installed RouterOS just now, and don't know where to start - ask here!	16,447 Topics	74,272 Posts
	General RouterOS general discussion	47,440 Topics	231,382 Posts
	Forwarding Protocols BGP, OSPF, MPLS, MME, RIP, HWMPPplus	3,027 Topics	14,934 Posts
	Wireless Networking Wireless networks	13,050 Topics	73,915 Posts
	Scripting RouterOS Scripting and API	6,081 Topics	28,367 Posts
	Virtualization CHR, MetaRouter, KVM, Xen and other virtual systems that run RouterOS	457 Topics	4,290 Posts



¿Preguntas?

MUCHAS GRACIAS!

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