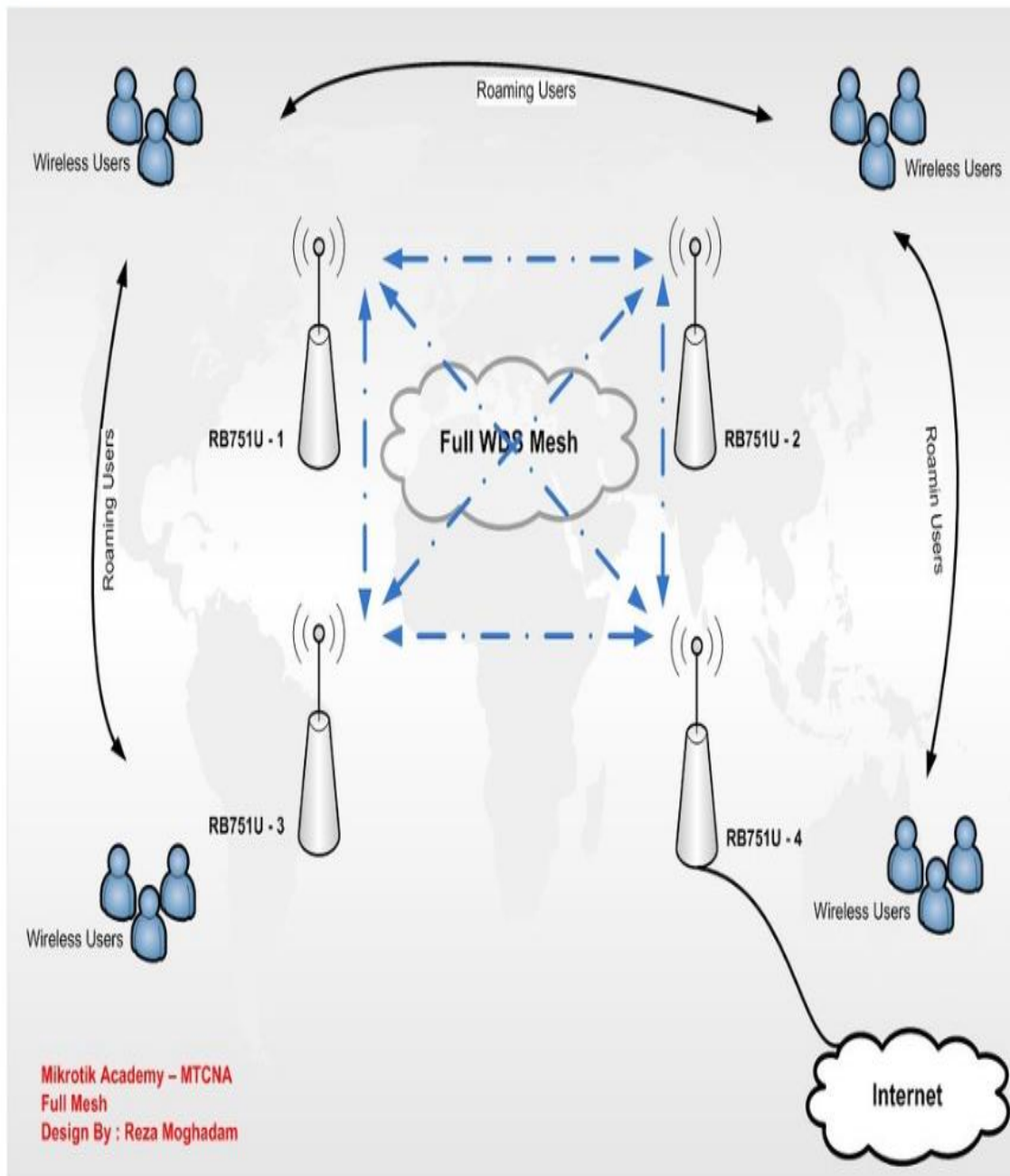




# INFORME DE LABORATORIO

Diagram :



# ELECTIVA DE REDES





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EXCELENCIA  
Y LA CALIDAD



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SEDE: MAICAO  
FACULTAD DE INGENIERIAS  
PROGRAMA DE INGENIERIA DE SISTEMAS

ELECTIVA DE REDES

INFORME LABORATORIO

EUCLIDES RAFAEL VIDES URQUIJO  
SERGIO ANDRES GONZALES BOLANOS  
MARIO YESID ORDONEZ FLOREZ  
ALEX VIDES NIETO

Docente:  
FARID PEREZ

MAICAO – LA GUAJIRA  
05 DE ABRIL DE 2019

**ELECTIVA DE REDES**





## INTRODUCCION

El siguiente informe describe la configuración de WDA MEST y su funcionamiento con los mecanismos implementados para recibir y enviar datos por medio de protocolos y Veremos las características y topología de este tipo de redes en cual desarrollaremos de una forma fácil y sencilla dando los paso a paso a seguir para una buena configuración, El WDA MEST nos ayuda a mirar el rendimiento de las redes y sus principales restricciones que pueden suceder al momento de configurar la red también podemos ver las ventajas y desventajas de su utilización de las redes ya que son el protocolo de enrutamiento mas utilizado.



# ELECTIVA DE REDES



## ¿QUÉ ES MESH?

Una red MESH es aquella en la cual los dispositivos se comunican entre pares (punto a punto) que no requiere de un proveedor para su funcionamiento. Esto obliga a recordar las redes P2P, teniendo esa idea como fundamento. En MESH, cada dispositivo terminal, par, toma roles de servidor/cliente/router generando una “malla” en la que todos participan y expande su cobertura a medida que más pares se conectan, su topología es distribuida. Es la personalidad de router que puede ejecutar cada dispositivo, es decir, la capacidad de propagar señal, lo que permite la expansión de la red, creando un nodo en cada par conectado.



# ELECTIVA DE REDES



## VENTAJAS

- Las Redes Mesh evitan fallos en la red, ya que gracias a su topología cualquier interrupción entre los nodos resulta acabar con una nueva ruta para realizar la entrega del mensaje, de la manera en que esto ocurra está encargado cada protocolo según su diseño.
- cada nodo puede actuar como cliente y como repetidor de la red, lo que suple la necesidad de infraestructuras de repetición o nodos centrales.
- Facilita el mejor uso de la red en una forma más sencilla
- En el caso de una Red Mesh inalámbrica los costos de formar la red y mantenerla resultan mínimos, pues no hay que efectuar trabajos de cableado para lograr la conectividad entre los nodos.
- La complejidad en tarea de instalación de un punto mesh queda reducida, al compararlo con una red cableada, ya que simplemente es necesario colocar el nodo con el software Mesh preinstalado. Al disponer de rutas dinámicas, cuando este nodo encuentre un nodo vecino, estaría dispuesto para entrar en servicio.

# ELECTIVA DE REDES





## VENTAJAS

- Muchas de las desventajas y problemas que presenta esta red tienen que ver con las distancias entre los nodos y de cuántos de ellos se conforma la red, pues añade retardos y poca escalabilidad, dificultando más aún la labor de enviar y recibir paquetes ya que los saltos entre los nodos van reduciendo el rendimiento.
- También para Redes Mesh inalámbricas surge el inconveniente de que algunas frecuencias pueden interferir en los enlaces, produciendo retrasos e incluso pérdidas de paquetes. Estos tiempos de retardo varían según la aplicación que se le dé a la Red Mesh y cuán eficaz es el protocolo utilizado para mejorarse de fallos y encontrar las mejores rutas.
- Que entre más se conecten a ella se va reduciendo la cantidad de datos y se colapsa la red
- Seguridad: Las redes ad-hoc necesitan hablar con sus clientes antes de autenticarlos. Esto constituye un reto en cuanto a su seguridad. Las redes Mesh son, del mismo modo, muy vulnerables a ataques DoS. Además, al igual que sucede con otras tecnologías, los datos pueden ser interceptados con programas gratuitos. Para solucionar esto, algunas empresas han desarrollado protocolos que utilizan técnicas de cifrado diferentes a las de WiFi y que no pueden ser interceptados con una tarjeta de red inalámbrica común.

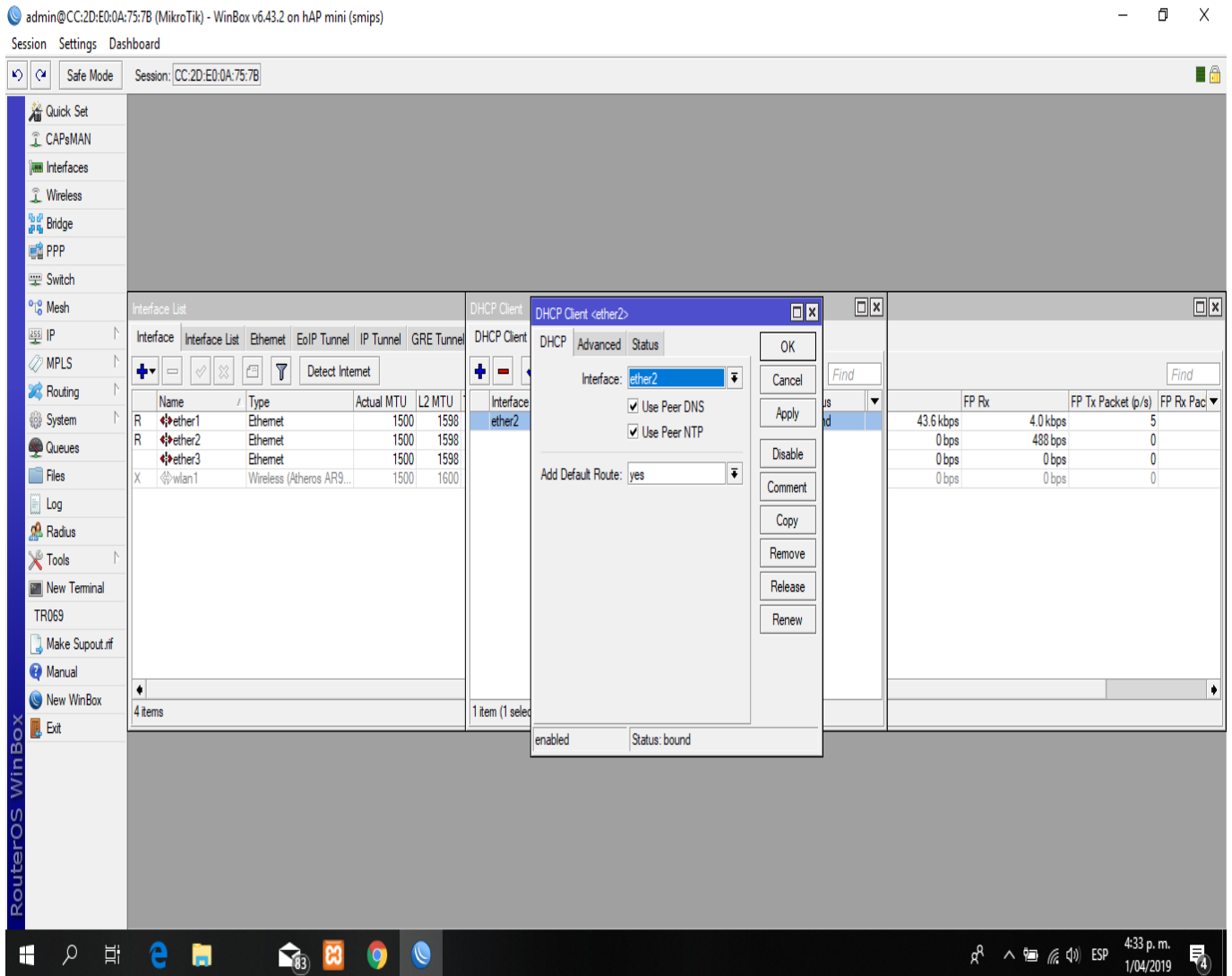
# ELECTIVA DE REDES





Acontinuacion mostraremos cada uno de los pasos a seguir para su configuración

Imagen 1



**ELECTIVA DE REDES**





Imagen 2

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

RouterOS WinBox

Interface	Type	Actual MTU	L2 MTU
R ether1	Ethernet	1500	1598
R ether2	Ethernet	1500	1598
R ether3	Ethernet	1500	1598
X wlan1	Wireless (Atheros AR9...	1500	1600

Interface	Use P...	Add D...	IP Address	Expires After	Status
ether2	yes	yes	130.160.1.88...	00:09:02	bound

	FP Rx	FP Tx	Packet (p/s)	FP Rx Pac
	43.6 kbps	3.3 kbps	5	
	0 bps	480 bps	0	
	0 bps	0 bps	0	
	0 bps	0 bps	0	

4 items | 1 item (1 selected)

4:34 p. m. 1/04/2019

# ELECTIVA DE REDES







Imagen 3

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rtf  
Manual  
New WinBox  
Exit

Mesh

Mesh	Ports	FDB	
+	-	+	
Mesh Traceroute			
Name	Type	Actual MTU	L2 MTU
R	interface-mesh	Mesh	1500

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel
Name	Type	Actual MTU	L2 MTU		
R	ether1	Ethernet	1500	1	
R	ether2	Ethernet	1500	1	
R	ether3	Ethernet	1500	1	
R	interface-mesh	Mesh	1500	1	
X	wlan1	Wireless (Atheros AR9)	1500	1	

Interface <wlan1>

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

Mode: ap bridge  
Band: 2GHz-B/G/N  
Channel Width: 20MHz  
Frequency: 2462 MHz  
SSID: GRUPO-EMPANADA  
Radio Name: APPCPAL  
Scan List: default  
Wireless Protocol: any  
Security Profile: default  
WPS Mode: push button  
Frequency Mode: regulatory-domain  
Country: colombia  
Antenna Gain: 0 dBi  
WMM Support: disabled  
Bridge Mode: enabled  
VLAN Mode: no tag  
VLAN ID: 1  
Default AP Tx Rate: bps  
Default Client Tx Rate: bps  
 Default Authenticate  
 Default Forward  
 Hide SSID

OK  
Cancel  
Apply  
Enable  
Comment  
Simple Mode  
Torch  
WPS Accept  
WPS Client  
Setup Repeater  
Scan...  
Freq. Usage...  
Align...  
Sniff...  
Snooper...  
Reset Configuration

FP Rx	FP Tx Packet (p/s)	FP Rx Pac
0 bps	0 bps	0

FP Rx	FP Tx Packet (p/s)	FP Rx Pac
63.9 kbps	6.3 kbps	9
0 bps	15.8 kbps	0
0 bps	0 bps	0
0 bps	0 bps	0
0 bps	0 bps	0

4:41 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 4

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Spout.rtf  
Manual  
New WinBox  
Exit

Mesh

Name	Type	Actual MTU	L2 MTU
R interface-mesh	Mesh	1500	

Interface List

Interface	Type	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel
R ether1	Ethernet				
R ether2	Ethernet				
R ether3	Ethernet				
R interface-mesh	Mesh				
R wlan1	Wireless (Atheros AR9...)				

Interface <wlan1>

HT MCS WDS Natreme NV2 Tx Power Current Tx Power ...

WDS Mode: dynamic mesh

WDS Default Bridge: interface-mesh

WDS Default Cost: 100

WDS Cost Range: 50-150

WDS Ignore SSID

OK  
Cancel  
Apply  
Disable  
Comment  
Simple Mode  
Torch  
WPS Accept  
WPS Client  
Setup Repeater  
Scan...  
Freq. Usage...  
Align...  
Sniff...  
Snooper...  
Reset Configuration

FP Rx	FP Tx Packet (p/s)	FP Rx Pack
0 bps	0 bps	0

FP Rx	FP Tx Packet (p/s)	FP Rx Pack
68.7 kbps	9.7 kbps	9
0 bps	10.8 kbps	0
0 bps	0 bps	0
0 bps	0 bps	0
0 bps	0 bps	0

5 items (1 selected)

RouterOS WinBox

4:44 p. m.  
1/04/2019

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EXCELENCIA  
Y LA CALIDAD



Imagen 5

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh

IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Mesh

Mesh Ports FDB

Mesh Traceroute

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R interface-mesh	Mesh	1500			0 bps	0 bps	0	0	0 bps	0 bps	0

1 item out of 5

5 items (1 selected)

4:44 p. m.  
1/04/2019

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EXCELENCIA  
Y LA CALIDAD



Imagen 6

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Mesh

Mesh Ports FDB

+ - ✓ ✕ 📄 🔍 Find

Interface	Mesh
wlan 1	interface-mesh

1 item

5 items (1 selected)

4:44 p. m.  
1/04/2019

**ELECTIVA DE REDES**





Imagen 7

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rif  
Manual  
New WinBox  
Exit

Mesh

Interface	Mesh
wlan1	interface-mesh

Mesh Port <wlan1>

Interface: wlan1  
Mesh: interface-mesh  
Path Cost: 10  
Hello Interval: 10 s  
Port Type: auto  
DR Address: 00:00:00:00:00:00

enabled inactive Active Type: unknown

1 item (1 selected)

5 items (1 selected)

4:44 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 8

admin@CC:2D:E0:0A:75:7B (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7B

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Mesh

Name	Type	Actual MTU	L2 MTU	Tx
interface-mesh	Mesh	1500		

1 item out of 5 (1 selected)

5 items (1 selected)

Interface <interface-mesh>

General HWMP Status Traffic

Name: interface-mesh  
Type: Mesh  
MTU: 1500  
Actual MTU: 1500  
L2 MTU:  
MAC Address:  
ARP: enabled  
ARP Timeout:  
Admin. MAC Address:

OK  
Cancel  
Apply  
Disable  
Comment  
Copy  
Remove  
Torch  
Mesh Traceroute

enabled running slave

FP Rx 0 bps FP Tx Packet (p/s) 0 FP Rx Pac 0

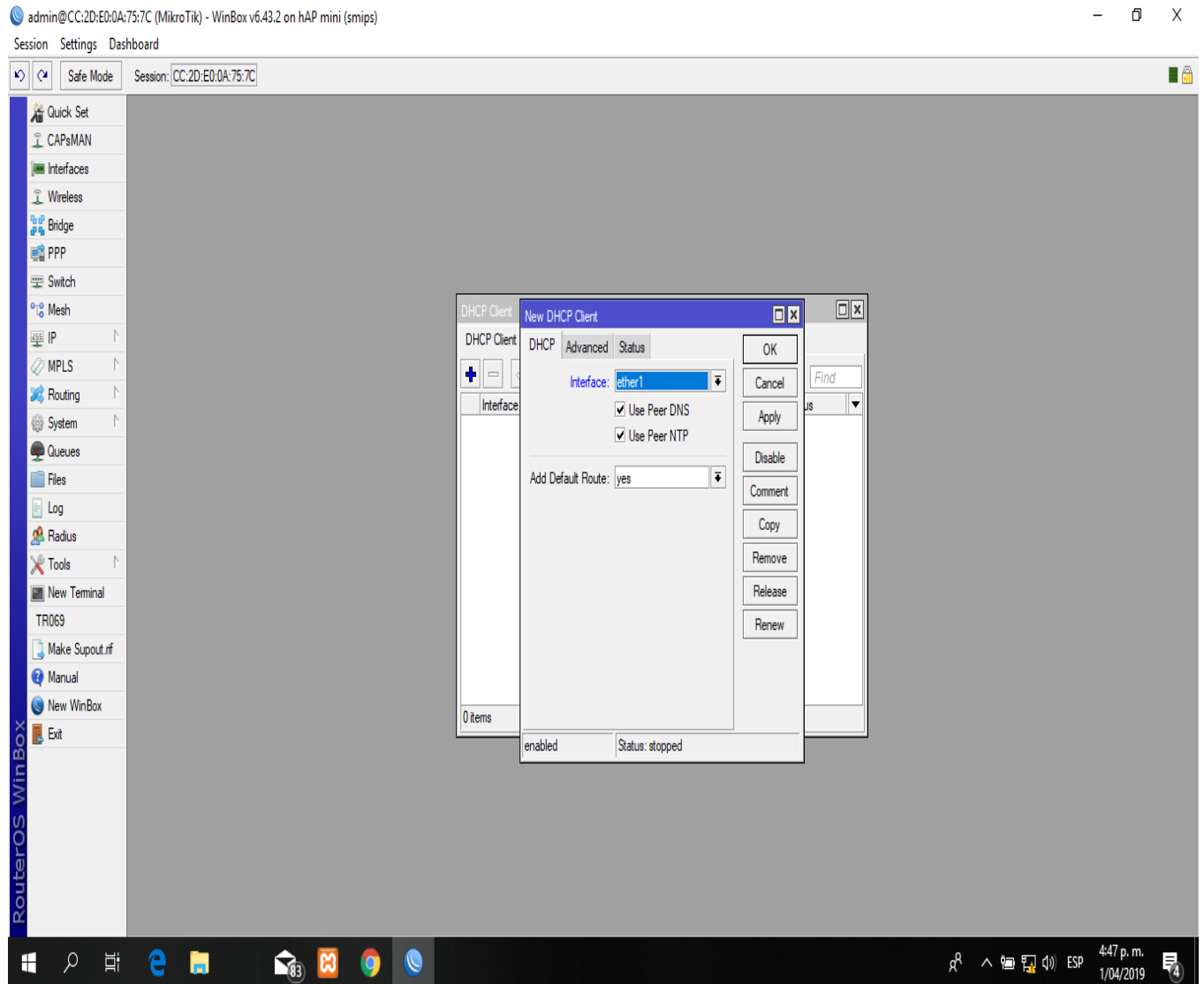
4:44 p. m.  
1/04/2019

**ELECTIVA DE REDES**





Imagen 9



# ELECTIVA DE REDES





Imagen 10

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- TR069
- Make Supout.tif
- Manual
- New WinBox
- Exit

```

MikroTik RouterOS 6.43.2 (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] > ping 8.8.8.8
  SIZE TTL TIME  STATUS
0  8.8.8.8      56 118 58ms
1  8.8.8.8      56 118 58ms
2  8.8.8.8      56 118 58ms
  
```

RouterOS WinBox

4:48 p.m.  
1/04/2019

# ELECTIVA DE REDES







Imagen 11

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TROGS  
Make Supout.rif  
Manual  
New WinBox  
Exit

Mesh

Name	Type	Actual MTU	L2 MTU	Tx
R interface-mesh	Mesh	1500		

Mesh Traceroute

1 item out of 5

Interface <interface-mesh>

General HWMP Status Traffic

Name: interface-mesh  
Type: Mesh  
MTU: 1500  
Actual MTU: 1500  
L2 MTU:  
MAC Address:  
ARP: enabled  
ARP Timeout:  
Admin. MAC Address:

OK  
Cancel  
Apply  
Disable  
Comment  
Copy  
Remove  
Torch  
Mesh Traceroute

enabled running slave

4:48 p. m.  
1/04/2019

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Y LA CALIDAD



Imagen 12

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Mesh

Mesh Ports FDB

Mesh Traceroute

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R interface-mesh	Mesh	1500		0 bps	0 bps	0	0	0	0 bps	0	0

1 item out of 5

RouterOS WinBox

4:48 p. m. 1/04/2019

**ELECTIVA DE REDES**





Imagen 13

The screenshot shows the Mikrotik WinBox interface for configuring the wireless interface wlan1. The main window is titled "Interface wlan1" and has several tabs: General, Wireless, Data Rates, Advanced, HT, HT MCS, WDS, and Natreme. The "General" tab is active, showing the following settings:

- Mode: ap bridge
- Band: 2GHz-B/G/N
- Channel Width: 20MHz
- Frequency: 2462 MHz
- SSID: Calvesin
- Radio Name: APPCPAL
- Scan List: default
- Wireless Protocol: any
- Security Profile: default
- WPS Mode: push button
- Frequency Mode: regulatory-domain
- Country: colombia
- Antenna Gain: 0 dB
- WMM Support: disabled
- Bridge Mode: enabled
- VLAN Mode: no tag
- VLAN ID: 1
- Default AP Tx Rate: [dropdown] bps
- Default Client Tx Rate: [dropdown] bps
- Default Authenticate:
- Default Forward:
- Hide SSID:

On the right side, there is a "Wireless" tab with a table showing statistics:

pps	FP Rx	FP Tx Packet (p/s)	FP Rx Pack
pps	14.1 kbps	1	
pps	6.1 kbps	10	
pps	0 bps	0	
pps	0 bps	0	
pps	0 bps	0	

The interface also shows a sidebar with navigation options like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, TR069, Make Supout.rtf, Manual, New WinBox, and Exit. The bottom status bar shows the time as 4:51 p.m. on 1/04/2019.

# ELECTIVA DE REDES





Imagen 14

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rif  
Manual  
New WinBox  
Exit

Mesh

Interface List

Name	Type	Actual MTU	L2 M
R ether1	Ethernet	1500	1
R ether2	Ethernet	1500	1
R ether3	Ethernet	1500	1
R interface-mesh	Mesh	1500	1
R wlan1	Wireless (Atheros AR9...	1500	1

5 items (1 selected)

Interface <wlan1>

HT MCS | WDS | Natreme | NV2 | Tx Power | Current Tx Power | Status ...

WDS Mode: dynamic mesh

WDS Default Bridge: interface-mesh

WDS Default Cost: 100

WDS Cost Range: 50-150

WDS Ignore SSID

OK  
Cancel  
Apply  
Disable  
Comment  
Simple Mode  
Torch  
WPS Accept  
WPS Client  
Setup Repeater  
Scan...  
Freq. Usage...  
Align...  
Sniff...  
Snooper...  
Reset Configuration

FP Rx	FP Tx Packet (p/s)	FP Rx Pac
pps	6.9 kbps	1
pps	9.1 kbps	13
pps	0 bps	0
pps	0 bps	0
pps	0 bps	0

RouterOS WinBox

4:51 p. m.  
1/04/2019

# ELECTIVA DE REDES





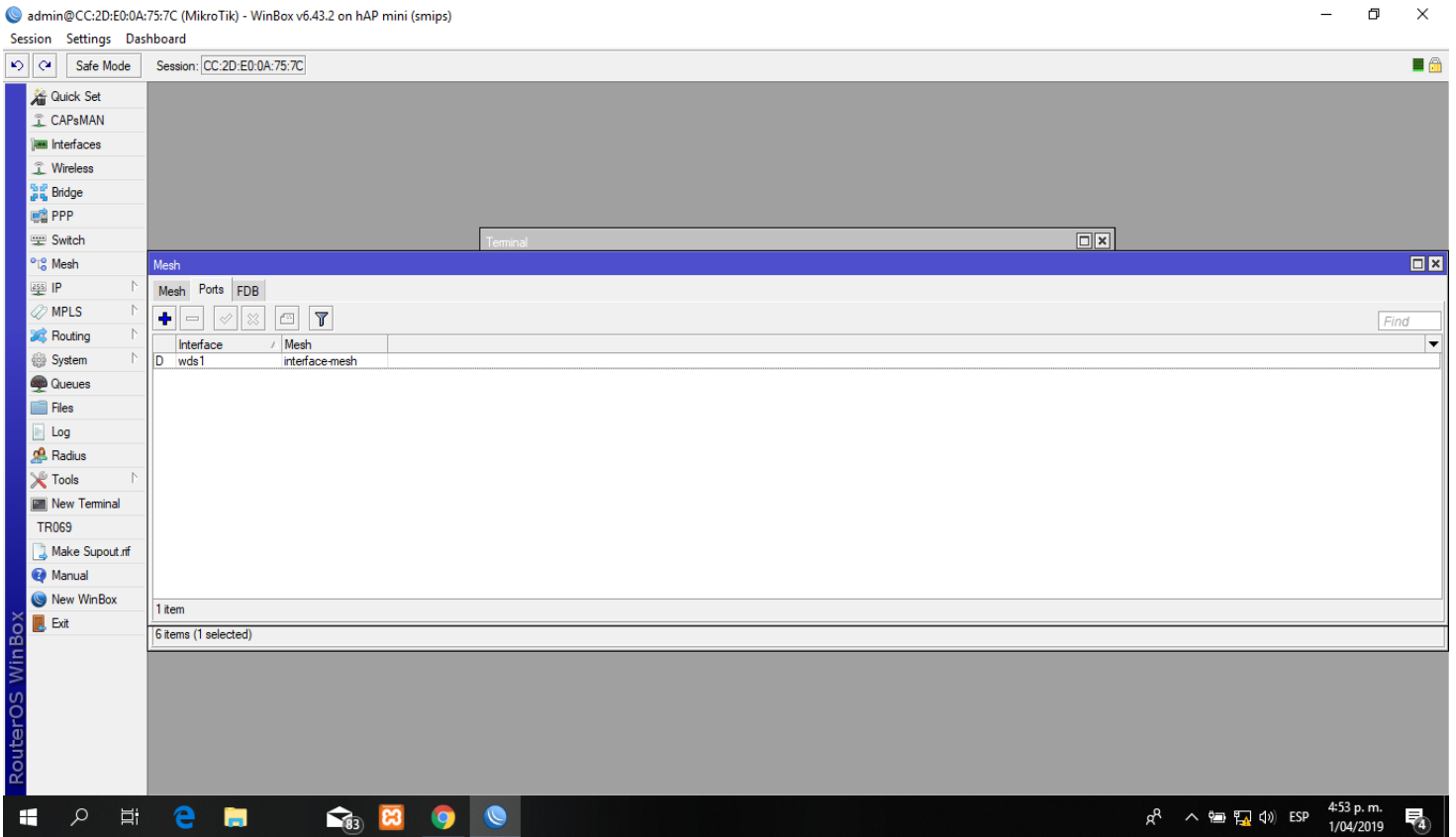
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Y LA CALIDAD



Imagen 15



**ELECTIVA DE REDES**





Imagen 16

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Mesh

Name	Type
interface-mesh	Mesh

1 item out of 6  
6 items (1 selected)

Firewall

#	Action	Chain	Src.
0 items			

New NAT Rule

General Advanced Extra Action ...

Chain: srcnat

Src. Address:

Dst. Address:

Protocol:

Src. Port:

Dst. Port:

Any. Port:

In. Interface:

Out. Interface:  ether1

In. Interface List:

Out. Interface List:

Packet Mark:

Connection Mark:

Routing Mark:

Routing Table:

Connection Type:

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

Find all

Bytes	Packets	FP Tx Packet (p/s)	FP Rx Pac
0 bps		0	0

4:54 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 17

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Mesh

Name	Type
R interface-mesh	Mesh

1 item out of 6  
6 items (1 selected)

Firewall

#	Action	Chain	Src.
---	--------	-------	------

0 items

New NAT Rule

Advanced Extra Action Statistics ...

Action: masquerade

Log

Log Prefix: [ ]

To Ports: [ ]

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

Find all

Bytes	Packets	FP Tx Packet (p/s)	FP Rx Packet
0 bps		0	0

4:54 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 18

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rif  
Manual  
New WinBox  
Exit

Mesh

Name	Type
R interface-mesh	Mesh

1 item out of 6  
6 items (1 selected)

Terminal

Firewall

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. Int...	Bytes	Packets	FP Tx Packet (p/s)	FP Rx Pac
0	mas...	sronat						ether1		0 B	0	0 bps	0

1 item

4:54 p. m.  
1/04/2019

# ELECTIVA DE REDES







Imagen 19

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Spoutout.rif  
Manual  
New WinBox  
Exit

Interface List

Name	Type
R ether1	Ethernet
R ether2	Ethernet
R ether3	Ethernet
R interface-mesh	Mesh
R wlan1	Wireless (Ath)
DRS wds1	WDS

Terminal

DHCP Server

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Hos...	Expires After	Status
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4b...	00:09:52	bound

1 item

6 items (1 selected)

FP Tx Packet (p/s) FP Rx Pac

bps	5
bps	11
bps	0
bps	0
bps	0
bps	0

4:56 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 20

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set CAPsMAN Interfaces Wireless Bridge PPP Switch Mesh IP MPLS Routing System Queues Files Log Radius Tools New Terminal TR069 Make Supout.rif Manual New WinBox Exit

Mesh DHCP Server

Interface List DHCP Networks Leases Options Option Sets Alerts

Wireless Tables

WiFi Interfaces W60G Station Ntreme Dual Access List Registration Connect List Security Profiles Channels

00 Reset Find

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
AP2	6C:3B:6B:25:20:78	wlan1	00:04:57	yes	yes	0.980	-29/-38	72.2Mbps...	1Mbps

1 item

RouterOS WinBox

Windows taskbar: 4:57 p. m. 1/04/2019

# ELECTIVA DE REDES





Imagen 21

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Terminal

WiFi Interfaces W60G Station Nstrel

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Hos...	Expires After	Status
11.11.11.253	DC:72:9B:AE:B3...	1dc:72:9b:ae:b3:df	dhcp1	11.11.11.253	DC:72:9B:AE:B3...	HUAWEI...	00:00:01	testing
11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4b...	00:09:09	bound

Packet (p/s) FP Rx Packet (p/s)  
0 0 CC  
0 0 CC

2 items out of 6

RouterOS WinBox

4:57 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 22

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set CAPsMAN Interfaces Wireless Bridge PPP Mesh IP MPLS Routing System Queues Files Log Radius Tools New Terminal TR069 Make Supout.rtf Manual New WinBox Ext

Terminal

Mesh DHCP Server

Interface List

Interface	Interface List	Ethernet
R	ether1	Ethernet
R	ether2	Ethernet
R	ether3	Ethernet

DHCP Networks

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name	Expires After
D 11.11.11.251	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.251	C0:F4:E6:30:9F:54	HUAWEI_P20_lte-87d1453aa	00:09:31 bou
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66:f8:00:ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929d5471ba7517	00:09:14 bou
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951104f	00:08:43 bou
D 11.11.11.253	DC:72:9B:AE:B3:...	1:dc:72:9b:ae:b3:df	dhcp1	11.11.11.253	DC:72:9B:AE:B3:...	HUAWEI_P20_lte-f2aec64d0	00:08:33 bou

Wireless Tables

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal...	Tx Rate	Rx Rate
AP1	6C:3B:6B:25:20:78	wlan1	00:01:26	yes	yes	0.010	-30/-34	144.4Mbp...	144.4Mbp...

1 item

4:58 p. m. 1/04/2019

# ELECTIVA DE REDES





Imagen 23

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set CAPsMAN Interfaces Wireless Bridge PPP Switch Mesh IP MPLS Routing System Queues Files Log Radius Tools New Terminal TR069 Make Supout.rif Manual New WinBox Exit

Terminal

Mesh DHCP Server

Interface List

Interface	Interface List	Ethernet
R	ether1	Ethernet
R	ether2	Ethernet
R	ether3	Ethernet

DHCP Server

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name	Expires After
D 11.11.11.251	C0:F4:E6:30:9F:54	1:c0f4e6309f54	dhcp1	11.11.11.251	C0:F4:E6:30:9F:54	HUAWEI_P20_ite-87d1453aa	00:09:20
D 11.11.11.252	84:98:66:F8:00:ED	1:849866f800ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929d5471ba7517	00:09:03
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951104f	00:08:32
D 11.11.11.253	DC:72:9B:AE:B3:...	1:dc729baeb3df	dhcp1	11.11.11.253	DC:72:9B:AE:B3:...	HUAWEI_P20_ite-f2aec64d0	00:08:22

Wireless Tables

Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R wlan1	Wireless (Atheros AR9...	1500	4.7 Mbps	240.5 kbps	403	356	0 bps	240.5 kbps	0	356 CC
DRS wlan2	WDS	1500	4.7 Mbps	240.5 kbps	403	356	0 bps	240.5 kbps	0	356 CC

2 items out of 6

4:58 p. m. 1/04/2019

# ELECTIVA DE REDES





Imagen 24

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal

TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

RouterOS WinBox

Mesh

Mesh Ports FDB

Mesh Traceroute

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
interface-mesh	Mesh	1500		672 bps	0 bps	2	0	0 bps	0 bps	0	0

Wireless Tables

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

00 Reset

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
wlan1	C0:F4:E6:30:9F:54	wlan1	00:00:50	no	no	1.850	-24	1Mbps	1Mbps

1 item

5:00 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 25

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Spout.rtf  
Manual  
New WinBox  
Exit

Terminal

Mesh

Mesh Ports FDB

Mesh Traceroute

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R interface-mesh	Mesh	1500		680 bps	0 bps	2	0	0 bps	0 bps	0	0

Wireless Tables

WiFi Interfaces W60G Station Natreme Dual Access List Registration Connect List Security Profiles Channels

Reset

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal...	Tx Rate	Rx Rate
	C0:F4:E6:30:9F:54	wlan1	00:00:20	no	no	4.390 -23		1Mbps	1Mbps
	34:12:F9:AE:FE:4E	wlan1	00:00:12	no	no	2.920 -79		1Mbps	1Mbps

2 items

5:00 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 26

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal

TR069  
Make Supout.rf  
Manual  
New WinBox  
Exit

Terminal

Mesh

Mesh Ports FDB

Mesh Traceroute

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R interface-mesh	Mesh	1500		336 bps	0 bps	1	0	0 bps	0 bps	0	0

Wireless Tables

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

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
	CD:F4:E6:30:9F:54	wlan1	00:00:41	no	no	0.110 -28	1Mbps	1Mbps	
	34:12:F9:AE:FE:4E	wlan1	00:00:33	no	no	0.130 -83	1Mbps	1Mbps	
	84:98:66:F8:00:ED	wlan1	00:00:14	no	no	0.100 -30	1Mbps	65Mbps-2...	
AP1	6C:3B:6B:25:20:78	wlan1	00:00:16	yes	yes	0.650 -34/-41	144.4Mbps...	1Mbps	

4 items

5:00 p. m.  
1/04/2019

# ELECTIVA DE REDES







Imagen 27

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rtf  
Manual  
New WinBox  
Exit

Terminal

Mesh

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VRPP	Bonding	LTE
R	ether1	Ethernet							
R	ether2	Ethernet							
R	ether3	Ethernet							
R	interface-mesh	Mesh							
R	wlan1	Wireless (Atheros AR9...							
DRS	wds3	WDS							

6 items (1 selected)

3 items

5:01 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 28

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal

Terminal

Mesh

Mesh Ports FDB

Mesh Traceroute

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R interface-mesh	Mesh	1500		1008 bps	0 bps	3	0	0 bps	0 bps	0	0

Wireless Tables

WlR Interfaces W60G Station Nstreme Dual Access List Registration Connect List Security Profiles Channels

00 Reset

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
C0:F4:E6:30:9F:54	wlan1	00:01:15	no	no	0	120 -22	1Mbps	1Mbps	
84:98:66:F8:00:ED	wlan1	00:00:17	no	no	2	630 -24	1Mbps	65Mbps-2...	
B4:F1:DA:AE:58:CA	wlan1	00:00:09	no	no	2	630 -47	1Mbps	65Mbps-2...	
AP1	6C:3B:6B:25:20:78	wlan1	00:00:50	yes	yes	0	330 -35/-39	144.4Mbp...	1Mbps

4 items

RouterOS WinBox

501 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 29

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
TR069  
Make Supout.rif  
Manual  
New WinBox  
Exit

Mesh

Interface List

Interface	Interface List	Ethernet	Ethernet
R	ether1	Ethernet	Ethernet
R	ether2	Ethernet	Ethernet
R	ether3	Ethernet	Ethernet
R	interface-mesh	Mesh	Mesh
R	wlan1	Wireless (Atheros)	Wireless (Atheros)

DHCP Server

DHCP Networks Leases Options Option Sets Alerts

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name	Expires After
D 11.11.11.254	B4:F1:DA:AE:58:CA	1:84:98:66:f8:0:ed	dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951104f	00:09:21 bou
D 11.11.11.252	84:98:66:F8:00:ED	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929d5471ba7517	00:09:17 bou
D 11.11.11.251	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.251	C0:F4:E6:30:9F:54	HUAWEI_P20_lte-87d1453aa	00:05:53 bou
D 11.11.11.253	DC:72:9B:AE:B3:...	1:dc:72:9b:ae:b3:df	dhcp1	11.11.11.253	DC:72:9B:AE:B3:...	HUAWEI_P20_lte-f2aec64d0	00:04:55 bou

5 items (1 selected)

4 items

4 items

FP Tx Packet (p/s) 6  
FP Rx Packet (p/s) 12  
bps 0  
bps 0  
bps 0

5:02 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 30

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC.2D.E0.0A:75:7C

**Interface List**

Name	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	6.5 kbps	
R ether2	Ethernet	1500	1598	67.5 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		336 bps	
R wlan1	Wireless (Atheros ARS...	1500	1600	384 bps	
DRS wlan1	WDS	1500	1600	384 bps	

6 items (1 selected)

**DHCP Server**

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name
D 11.11.11.251	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.251	C0:F4:E6:30:9F:54	HUAWEI_P20_lite-87d
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66:f8:00:ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd45471ba7f
D 11.11.11.253	DC:72:9B:AE:B3:...	1:dc:72:9b:ae:b3:df	dhcp1	11.11.11.253	DC:72:9B:AE:B3:...	HUAWEI_P20_lite-f2ae
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa9b4951

4 items

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

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Fx Signal ...	Tx Rate	Rx Rate
AP1	C0:F4:E6:30:9F:54	wlan1	00:02:11	no	no	6.290 -80		6Mbps	1Mbps
AP1	6C:3B:6B:25:20:78	wlan1	00:02:21	yes	yes	0.500 -65/-73		65Mbps-2...	24Mbps

2 items (1 selected)

5:07 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 31

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

**Interface List**

Interface	Type	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VRPP	Bonding	
R ether1	Ethernet								592 bps
R ether2	Ethernet								75.1 kbps
R ether3	Ethernet								0 bps
R interface-mesh	Mesh								528 bps
R wlan1	Wireless (Atheros AR9...								576 bps
DRS wds1	WDS								576 bps

**DHCP Server**

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address...	Active Host Name
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b-4951
D 11.11.11.251	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.251	C0:F4:E6:30:9F:54	HUAWEI_P20_lite-87d
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66:f8:0e:d	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd5471ba7
D 11.11.11.253	DC:72:9B:AE:B3...	1:dc:72:9b:ae:b3:df	dhcp1	11.11.11.253	DC:72:9B:AE:B3...	HUAWEI_P20_lite-42ae

**Terminal**

```

48 8.8.8.8          56 120 28ms
49 8.8.8.8          56 120 28ms
50 8.8.8.8          56 120 28ms
51 8.8.8.8          56 120 28ms
52 8.8.8.8          56 120 28ms
53 8.8.8.8          56 120 28ms
54 8.8.8.8          56 120 28ms
55 8.8.8.8          56 120 28ms
56 8.8.8.8          56 120 28ms
57 8.8.8.8          56 120 28ms
58 8.8.8.8          56 120 28ms
59 8.8.8.8          56 120 28ms
sent=60 received=60 packet-loss=0% min-rtt=28ms avg-rtt=28ms max-rtt=2
SmS
SBJ HOST          SIZE TTL TIME STATUS
60 8.8.8.8          56 120 28ms
61 8.8.8.8          56 120 28ms
62 8.8.8.8          56 120 28ms
63 8.8.8.8          56 120 28ms
64 8.8.8.8          56 120 28ms

```

**Wireless Tables**

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activ...	Tx/Rx Signal...	Tx Rate	Rx Rate
	C0:F4:E6:30:9F:54	wlan1	00:04:02	no	no	3.080 -80		13Mbps-2...	1Mbps
	5C:93:A2:E7:99:99	wlan1	00:01:14	no	no	0.640 -41		1Mbps	72.2Mbps...
AP1	6C:3B:6B:25:20:78	wlan1	00:04:12	yes	yes	0.120 -55/-75		65Mbps-2...	26Mbps-2...

# ELECTIVA DE REDES





Imagen 32

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

**Interface List**

Interface	Type	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel
R ether1	Ethernet				
R ether2	Ethernet				
R ether3	Ethernet				
R interface-mesh	Mesh				
R wlan1	Wireless (Atheros AR9...				

5 items (1 selected)

**WiFi Interfaces**

Radio Name	MAC Address	Interface	Uptime	AP
	5C:93:A2:E7:99:99	wlan1	00:00:43	no
	C0:F4:E6:30:9F:54	wlan1	00:00:36	no

2 items

**Interface <wlan1>**

General Wireless Data Rates Advanced HT HT MCS WDS Nstreme

Mode: ap bridge

Band: 2GHz-B/G/N

Channel Width: 20MHz

Frequency: 2437 MHz

SSID: Calvesin

Radio Name: APPCPAL

Scan List: default

Wireless Protocol: any

Security Profile: default

WPS Mode: push button

Frequency Mode: regulatory-domain

Country: colombia

Antenna Gain: 0 dBi

WMM Support: disabled

Bridge Mode: enabled

VLAN Mode: no tag

VLAN ID: 1

Default AP Tx Rate: bps

Default Client Tx Rate: bps

Default Authenticate

Default Forward

Hide SSID

Buttons: OK, Cancel, Apply, Disable, Comment, Simple Mode, Torch, WPS Accept, WPS Client, Setup Repeater, Scan..., Freq. Usage..., Align..., Sniff..., Snooper..., Reset Configuration

# ELECTIVA DE REDES





Imagen 33

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set CAPsMAN Interfaces Wireless Bridge PPP Switch Mesh IP MPLS Routing System Queues Files Log Radius Tools New Terminal TR069 Make Supout.nf Manual New WinBox Exit

Interface List

Name	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	12.3 kbps	
R ether2	Ethernet	1500	1598	74.8 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		125.3 kbps	

DHCP Server

Name	Interface	Relay	Lease Time	Address Pool	Add AR...
dhcp1	interface-mesh		00:10:00	dhcp_pool0	no

Mesh

Interface	Mesh
wlan1	interface-mesh

Mesh Port <wlan1>

Interface: wlan1  
Mesh: interface-mesh  
Path Cost: 10  
Hello Interval: 10 s  
Port Type: auto  
DR Address: 00:00:00:00:00:00

Out. Int...	Bytes	Packets
ether1	42.4 KB	530

RouterOS WinBox

5:28 p. m. 1/04/2019

**ELECTIVA DE REDES**





Imagen 34

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

### Interface List

Interface	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	44.5 kbps	
R ether2	Ethernet	1500	1598	85.5 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		60.0 kbps	
RS wlan1	Wireless (Atheros AR9...	1500	1600	60.0 kbps	

### DHCP Server

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name
D 11.11.11.248	20:47:DA:52:84:81	1:20:47:da:52:84...	dhcp1	11.11.11.248	20:47:DA:52:84:81	RedmiNote5-AndresS
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66:f8:00:ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd5471ba7
D 11.11.11.249	5C:93:A2:E7:99:99	1:5c:93:a2:e7:99...	dhcp1	11.11.11.249	5C:93:A2:E7:99:99	AM-31-PORT
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951

### WiFi Interfaces

Radio Name	MAC Address	Interface	Uptime	AP	W.	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
	C0:F4:E6:30:9F:54	wlan1	00:06:41	no	no	0.230 -53		54Mbps	58.5Mbps...
	B4:F1:DA:AE:58:CA	wlan1	00:02:39	no	no	9.470 -46		57.7Mbps...	65Mbps-2...
	5C:93:A2:E7:99:99	wlan1	00:00:56	no	no	0.690 -49		72.2Mbps...	72.2Mbps...
	84:98:66:F8:00:ED	wlan1	00:00:36	no	no	1.220 -27		65Mbps-2...	65Mbps-2...
	20:47:DA:52:84:81	wlan1	00:00:10	no	no	5.790 -53		5.5Mbps	72.2Mbps...

5 items (1 selected)

5 items

5:31 p. m.  
1/04/2019

# ELECTIVA DE REDES







Imagen 35

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

**Interface List**

Interface	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	100.2 kbps	
R ether2	Ethernet	1500	1598	80.3 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		1899.4 kbps	
RS wlan1	Wireless (Atheros AR9...	1500	1600	1909.7 kbps	
DRS wds1	WDS	1500	1600	1907.7 kbps	

**DHCP Server**

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name
D 11.11.11.244	5C:93:A2:E9:F9:1B	15c:93:a2:e9f9:1b	dhcp1	11.11.11.244	5C:93:A2:E9:F9:1B	AM-O2-PORT
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc0aa5b4951
D 11.11.11.247	70:70:0D:4D:B0:7C	1:70:70:d4db0:7c	dhcp1	11.11.11.247	70:70:0D:4D:B0:7C	Kendall-A
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66f8:0ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd5471ba7
D 11.11.11.245	BC:FF:EB:3C:BE:...	1bcffeb:3cbe:ae	dhcp1	11.11.11.245	BC:FF:EB:3C:BE:...	
D 11.11.11.249	5C:93:A2:E7:99:99	15c:93:a2:e799:99	dhcp1	11.11.11.249	5C:93:A2:E7:99:99	AM-31-PORT
D 11.11.11.246	C0:F4:E6:30:9F:54	1c0f4e6:309f:54	dhcp1	11.11.11.246	C0:F4:E6:30:9F:54	HUAWEI_P20_lite-87d
D 11.11.11.248	20:47:DA:52:84:81	120:47:da:52:84:...	dhcp1	11.11.11.248	20:47:DA:52:84:81	RedmiNote5-AndresS

**WiFi Interfaces**

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
AP1	70:70:0D:4D:B0:7C	wlan1	00:00:15	no	no	0.550 -55		130Mbps...	72.2Mbps...
	6C:3B:6B:25:20:78	wlan1	00:00:23	yes	yes	0.020 -40/-35		115.5Mbps...	144.4Mbps...

# ELECTIVA DE REDES





Imagen 36

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

**Interface List**

Interface	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	146.3 kbps	
R ether2	Ethernet	1500	1598	72.3 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		3.6 Mbps	
RS wlan1	Wireless (Atheros AR9...	1500	1600	3.6 Mbps	
DRS wds1	WDS	1500	1600	3.6 Mbps	

**DHCP Server**

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name
D 11.11.11.243	18:21:95:C4:80:2E	1:18:21:95:c4:80...	dhcp1	11.11.11.243	18:21:95:C4:80:2E	android-bd816f5352c6
D 11.11.11.244	5C:93:A2:E9:F9:1B	1:5c:93:a2:e9f9:1b	dhcp1	11.11.11.244	5C:93:A2:E9:F9:1B	AM-O2-PORT
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951
D 11.11.11.247	70:70:0D:4D:B0:7C	1:70:70:d:4d:b0:7c	dhcp1	11.11.11.247	70:70:0D:4D:B0:7C	Kendall-A
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66:f8:0:ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd5471ba7
D 11.11.11.245	BC:FF:EB:3C:BE:...	1:bc:ff:eb:3c:be:ae	dhcp1	11.11.11.245	BC:FF:EB:3C:BE:...	
D 11.11.11.249	5C:93:A2:E7:99:99	1:5c:93:a2:e7:99:...	dhcp1	11.11.11.249	5C:93:A2:E7:99:99	AM-31-PORT
D 11.11.11.246	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.246	C0:F4:E6:30:9F:54	HUAWEI_P20_lite-87d
D 11.11.11.248	20:47:DA:52:84:81	1:20:47:da:52:84:...	dhcp1	11.11.11.248	20:47:DA:52:84:81	RedmiNote5-AndresS

**WiFi Interfaces**

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
	70:70:0D:4D:B0:7C	wlan1	00:00:42	no	no	0.580	-54	130Mbps...	65Mbps-2...
	18:21:95:C4:80:2E	wlan1	00:00:24	no	no	0.050	-88	2Mbps	1Mbps
AP1	6C:3B:6B:25:20:78	wlan1	00:00:50	yes	yes	0.010	-42/-43	115.5Mbps...	130Mbps...

**ELECTIVA DE REDES**





Imagen 37

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Quick Set

CAPsMAN

Interfaces

Wireless

Bridge

PPP

Switch

Mesh

IP

MPLS

Routing

System

Queues

Files

Log

Radius

Tools

New Terminal

TR069

Make Supout.rif

Manual

New WinBox

Exit

Interface List

Interface	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	30.0 kbps	
R ether2	Ethernet	1500	1598	84.8 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		1151.7 kbps	
RS wlan1	Wireless (Atheros AR9...	1500	1600	1156.7 kbps	
DRS wds1	WDS	1500	1600	1156.7 kbps	

DHCP Server

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name
D 11.11.11.243	18:21:95:C4:80:2E	1:18:21:95:c4:80...	dhcp1	11.11.11.243	18:21:95:C4:80:2E	android-bd816f5352c...
D 11.11.11.244	5C:93:A2:E9:F9:1B	1:5c:93:a2:e9f9:1b	dhcp1	11.11.11.244	5C:93:A2:E9:F9:1B	AM-O2-PORT
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951
D 11.11.11.247	70:70:0D:4D:80:7C	1:70:70:d4db0:7c	dhcp1	11.11.11.247	70:70:0D:4D:80:7C	Kendall-A
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66f8:0ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd5471ba7
D 11.11.11.245	BC:FF:EB:3C:BE:...	1:bcff:eb:3c:be:ae	dhcp1	11.11.11.245	BC:FF:EB:3C:BE:...	
D 11.11.11.249	5C:93:A2:E7:99:99	1:5c:93:a2:e799:99	dhcp1	11.11.11.249	5C:93:A2:E7:99:99	AM-31-PORT
D 11.11.11.246	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.246	C0:F4:E6:30:9F:54	HUAWEI_P20_lite-87d
D 11.11.11.248	20:47:DA:52:84:81	1:20:47:da:52:84:...	dhcp1	11.11.11.248	20:47:DA:52:84:81	RedmiNote5-AndresS

WiFi Interfaces

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
	70:70:0D:4D:80:7C	wlan1	00:01:49	no	no	11.510 -50		130Mbps-...	65Mbps-2...
	18:21:95:C4:80:2E	wlan1	00:01:32	no	no	1.240 -88		7.2Mbps-2...	1Mbps
	6C:3B:6B:25:20:78	wlan1	00:01:57	yes	yes	0.010 -35/-40		104Mbps-...	144.4Mbps...

# ELECTIVA DE REDES





Imagen 38

admin@CC:2D:E0:0A:75:7C (MikroTik) - WinBox v6.43.2 on hAP mini (smips)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:0A:75:7C

Interface List

Interface	Type	Actual MTU	L2 MTU	Tx	Rx
R ether1	Ethernet	1500	1598	97.3 kbps	
R ether2	Ethernet	1500	1598	74.4 kbps	
R ether3	Ethernet	1500	1598	0 bps	
R interface-mesh	Mesh	1500		4.3 Mbps	3.3 Mbps

Mesh

Mesh Port <wds1>

Interface: wds1  
Mesh: interface-mesh  
Path Cost: 50  
Hello Interval: 10 s  
Port Type: auto  
DR Address: 00:00:00:00:00:00

dynamic enabled inactive Active Type: WDS

DHCP Server

Address	MAC Address	Client ID	Server	Active Address	Active MAC Address	Active Host Name
D 11.11.11.243	18:21:95:C4:80:2E	1:18:21:95:c4:80...	dhcp1	11.11.11.243	18:21:95:C4:80:2E	android-bd816f5352c6
D 11.11.11.244	5C:93:A2:E9:F9:1B	1:5c:93:a2:e9f9:1b	dhcp1	11.11.11.244	5C:93:A2:E9:F9:1B	AM-O2-PORT
D 11.11.11.254	B4:F1:DA:AE:58:CA		dhcp1	11.11.11.254	B4:F1:DA:AE:58:CA	android-4bc8aa5b4951
D 11.11.11.247	70:70:0D:4D:B0:7C	1:70:70:d4d:b0:7c	dhcp1	11.11.11.247	70:70:0D:4D:B0:7C	Kendal-A
D 11.11.11.252	84:98:66:F8:00:ED	1:84:98:66:f8:00:ed	dhcp1	11.11.11.252	84:98:66:F8:00:ED	android-929fd547ba7f
D 11.11.11.245	BC:FF:EB:3C:BE...	1:bc:ff:eb:3c:be...	dhcp1	11.11.11.245	BC:FF:EB:3C:BE...	
D 11.11.11.249	5C:93:A2:E7:99:99	1:5c:93:a2:e799:99	dhcp1	11.11.11.249	5C:93:A2:E7:99:99	AM-31-PORT
D 11.11.11.246	C0:F4:E6:30:9F:54	1:c0f4:e6:30:9f:54	dhcp1	11.11.11.246	C0:F4:E6:30:9F:54	HUAWEL_P20_lite-87d
D 11.11.11.248	20:47:DA:52:84:...	1:20:47:da:52:84:...	dhcp1	11.11.11.248	20:47:DA:52:84:81	RedmiNote5-AndresS

1 item (1 selected)

...	Tx/Rx Signal	Tx Rate	Rx Rate
10 -50		130Mbps...	65Mbps-2...
80 -89		1Mbps	1Mbps
AP1	6C:3B:6B:25:20:78 wlan1	00:02:26:yes yes	0.010 -34/-38 144.4Mbps... 144.4Mbps...

3 items

RouterOS WinBox

5:36 p. m.  
1/04/2019

ELECTIVA DE REDES





UNIVERSIDAD  
DE LA GUAJIRA  
SHIKII EKIRAJIA  
PÜLEE WAJIIRA



UNIGUAJIRA  
TODOS POR LA  
EXCELENCIA  
Y LA CALIDAD



imagen 1

admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

RouterOS WinBox

Wireless Tables

Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
wlan1	Wireless (Atheros AR9...	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0

1 item out of 5

3:47 p. m.  
1/04/2019

**ELECTIVA DE REDES**





imagen 2

admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

RouterOS WinBox

Interface <wlan1>

General | Wireless | HT | WDS | Nstreme | NV2 | Advanced Status | Status

Name: wlan1  
Type: Wireless (Atheros AR9300)  
MTU: 1500  
Actual MTU: 1500  
L2 MTU: 1600  
MAC Address: 6C:3B:6B:25:20:78  
ARP: enabled  
ARP Timeout:

OK  
Cancel  
Apply  
Enable  
Comment

Advanced Mode  
Torch  
WPS Accept  
WPS Client  
Setup Repeater  
Scan...  
Freq. Usage...  
Align...  
Sniff...  
Snooper...  
Reset Configuration

Name	Type	Actual MTU	Tx
wlan1	Wireless (Atheros AR9300)	1500	

1 item out of 5 (1 selected)

3:47 p. m.  
1/04/2019

# ELECTIVA DE REDES





imagen 3

The screenshot shows the Mikrotik WinBox interface for configuring a wireless interface. The main window is titled "Interface <wlan1>" and contains several tabs: General, Wireless, Data Rates, Advanced, HT, HT MCS, WDS, and Nstreme. The "General" tab is active, showing the following configuration:

- Mode: ap bridge
- Band: 2GHz-B/G/N
- Channel Width: 20MHz
- Frequency: 2462 MHz
- SSID: Grupo1
- Radio Name: AP2
- Scan List: default
- Wireless Protocol: any
- Security Profile: default
- WPS Mode: push button
- Frequency Mode: regulatory-domain
- Country: colombia
- Installation: any
- Antenna Gain: 0 dBi
- WMM Support: disabled
- Bridge Mode: enabled
- VLAN Mode: no tag
- VLAN ID: 1
- Default AP Tx Rate: bps
- Default Client Tx Rate: bps
- Default Authenticate:
- Default Forward:
- Hide SSID:

On the left side, there is a sidebar menu with various system settings like IP, Routing, System, Queues, Files, Log, RADIUS, Tools, etc. Below the sidebar, there is a "Wireless Tables" section with a table showing the configuration for wlan1:

Name	Type	Actual MTU	Tx
wlan1	Wireless (Atheros ARS)	1500	

At the bottom of the interface, there is a taskbar showing the Windows logo, search icon, and system tray with the time 3:50 p.m. and date 1/04/2019.

# ELECTIVA DE REDES





imagen 4

admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
RADIUS  
Tools  
New Terminal  
Make Spout.rtf  
Manual  
New WinBox  
Exit

Wireless Tables

Name	Type	Actual MTU	Tx
wlan1	Wireless (Atheros AR9...	1500	

1 item out of 5 (1 selected)

Interface <wlan1>

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

Mode: ap bridge  
Band: 2GHz-B/G/N  
Channel Width: 20MHz  
Frequency: 2462 MHz  
SSID: Calvesin  
Radio Name: AP2  
Scan List: default  
Wireless Protocol: any  
Security Profile: default  
WPS Mode: push button  
Frequency Mode: regulatory-domain  
Country: colombia  
Installation: any  
Antenna Gain: 0 dBi  
WMM Support: disabled  
Bridge Mode: enabled  
VLAN Mode: no tag  
VLAN ID: 1  
Default AP Tx Rate: bps  
Default Client Tx Rate: bps  
 Default Authenticate  
 Default Forward  
 Hide SSID

OK  
Cancel  
Apply  
Enable  
Comment  
Simple Mode  
Torch  
WPS Accept  
WPS Client  
Setup Repeater  
Scan...  
Freq. Usage...  
Align...  
Sniff...  
Snooper...  
Reset Configuration

FP Tx Packet (p/s) | FP Rx Packet (p/s)  
0 bps | 0 | 0 bps

3:50 p. m.  
1/04/2019

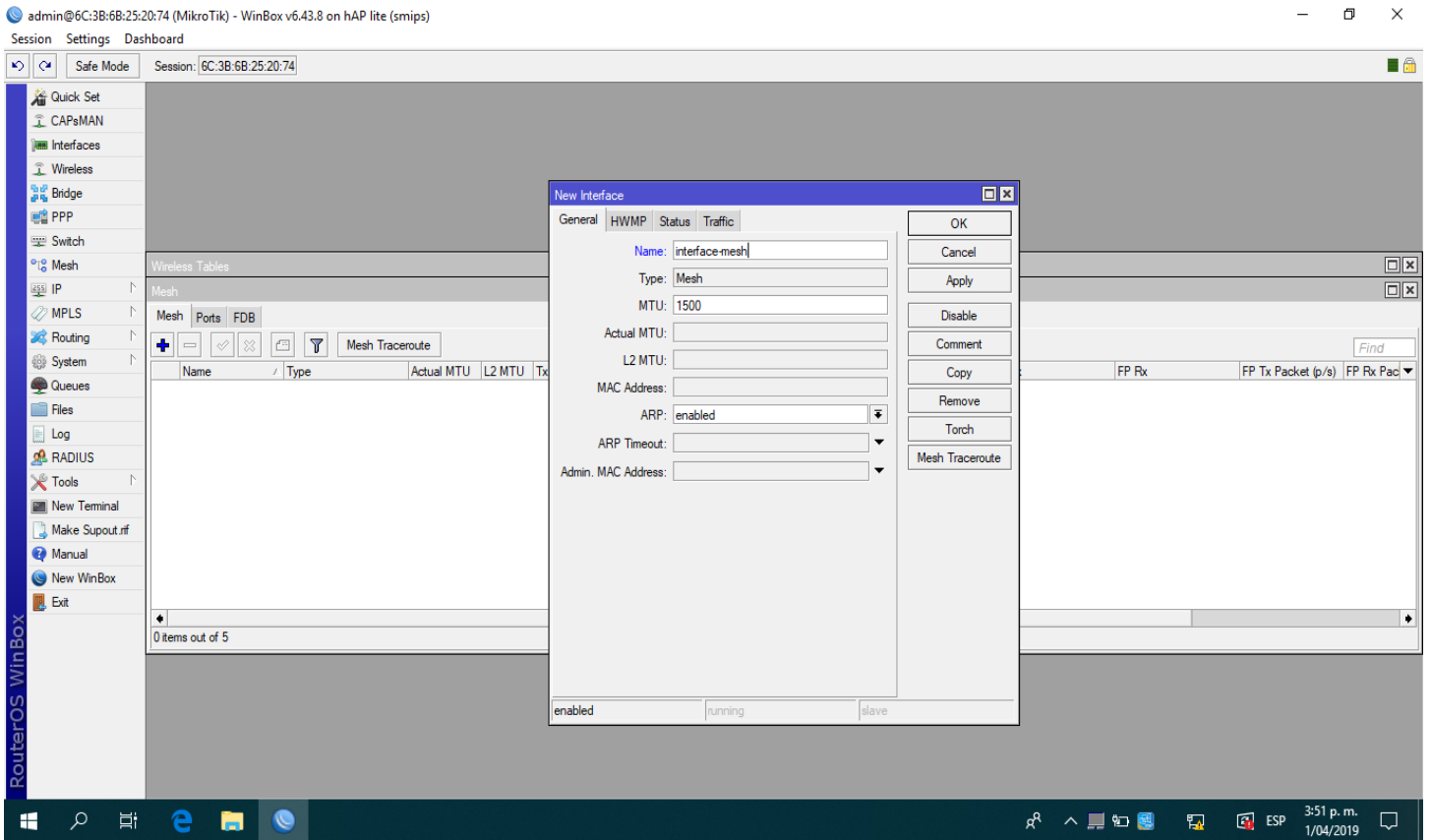
# ELECTIVA DE REDES







Imagen 5



**ELECTIVA DE REDES**





Imagen 6

The screenshot shows the Mikrotik WinBox interface for a MikroTik hAP lite router. The user is logged in as 'admin@6C:3B:6B:25:20:74'. The interface is in 'Safe Mode' and shows the 'Mesh' configuration page. A 'New Mesh Port' dialog box is open, allowing the user to configure a new mesh port. The dialog box contains the following fields and options:

- Interface: wlan 1
- Mesh: interface-mesh
- Path Cost: 10
- Hello Interval: 10 s
- Port Type: auto
- DR Address: 00:00:00:00:00:00
- Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove
- Active Type: unknown

The main interface shows a table with 0 items. The left sidebar contains various configuration options like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, RADIUS, Tools, New Terminal, Make Supout.rtf, Manual, New WinBox, and Exit. The bottom taskbar shows the Windows Start button, search, task view, and several application icons, along with the system tray showing the time as 3:51 p. m. on 1/04/2019.

# ELECTIVA DE REDES





imagen 7

The screenshot shows the Mikrotik WinBox interface for configuring the wlan1 interface. The interface is titled "Interface <wlan1>" and has several tabs: HT MCS, WDS, Nstreme, NV2, Tx Power, Current Tx Power, and Status. The WDS tab is active, showing the following settings:

- WDS Mode: dynamic mesh
- WDS Default Bridge: interface-mesh
- WDS Default Cost: 100
- WDS Cost Range: 50-150
- WDS Ignore SSID

On the right side of the WDS tab, there are several buttons: OK, Cancel, Apply, Enable, Comment, Simple Mode, Torch, WPS Accept, WPS Client, Setup Repeater, Scan..., Freq. Usage..., Align..., Sniff..., Snooper..., and Reset Configuration. Below these buttons, there is a table with columns for "FP Tx Packet (p/s)" and "FP Rx Packet (p/s)". The table shows 0 bps for both Tx and Rx.

The left sidebar of WinBox shows a navigation menu with options like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, RADIUS, Tools, New Terminal, Make Supout.rf, Manual, New WinBox, and Exit. The main window displays a table of wireless interfaces:

Name	Type	Actual MTU	Tx
wlan1	Wireless (Atheros AR9...	1500	

The status bar at the bottom of the window shows the time as 3:51 p. m. and the date as 1/04/2019.

# ELECTIVA DE REDES





imagen 8

admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
RADIUS  
Tools  
New Terminal  
Make Supout.rf  
Manual  
New WinBox  
Exit

Wireless Tables

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

Find

Radio Name	MAC Address	Interface	Uptime	AP	W	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
APPCPAL	CC:2D:E0:0A:75:7F	wlan1	00:00:33	yes	yes	0.970	-40/-30	130Mbps...	1Mbps

1 item  
2 items

3:52 p. m.  
1/04/2019

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EXCELENCIA  
Y LA CALIDAD



imagen 9

admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
RADIUS  
Tools  
New Terminal  
Make Supout.rif  
Manual  
New WinBox  
Exit

Wireless Tables

Radio Name	MAC Address	Interface	Uptime	AP	W	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
B4-F1-DA-AE:58:CA	wlan1	00:00:02	no	no	0.300	-39	1Mbps	65Mbps-2...	
APPCPAL	CC:2D:E0:0A:75:7F	wlan1	00:00:58	yes	yes	0.280	-41/-29	130Mbps-...	1Mbps

2 items  
2 items

RouterOS WinBox

Windows taskbar: 3:52 p. m. 1/04/2019

Imagen 10

**ELECTIVA DE REDES**



admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v.643.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
RADIUS  
Tools  
New Terminal  
Make Supout.rif  
Manual  
New WinBox  
Exit

Wireless Tables

WIFI Interfaces W60G Station Nstreme Dual Access List Registration Connect List Security Profiles Channels

Interface List

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

Detect Internet Find

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
R ether1	Ethernet	1500	1598	82.1 kbps	10.0 kbps	14	14	76.8 kbps	6.2 kbps	9	9
R ether2	Ethernet	1500	1598	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R ether3	Ethernet	1500	1598	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R ether4	Ethernet	1500	1598	0 bps	0 bps	0	0	0 bps	0 bps	0	0
R interface-mesh	Mesh	1500	1598	512 bps	2.0 kbps	2	3	0 bps	0 bps	0	0
RS wlan1	Wireless (Atheros AR9...	1500	1600	2.7 kbps	2.0 kbps	5	3	0 bps	2.0 kbps	0	0
DRS wds1	WDS	1500	1600	2.7 kbps	0 bps	5	0	0 bps	0 bps	0	0

7 items

3:54 p. m.  
1/04/2019

Imagen 11

# ELECTIVA DE REDES





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admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

RouterOS WinBox

Wireless Tables

Radio Name	MAC Address	Interface	Uptime	AP	W	Last Activ...	Tx/Rx Signal ...	Tx Rate	Rx Rate
	B4:F1:DA:AE:58:CA	wlan1	00:00:33	no	no	0.100	-39	57.7Mbps...	65Mbps-2...
	84:98:66:F8:00:ED	wlan1	00:00:03	no	no	0.000	-25	5.5Mbps	65Mbps-2...
APPCPAL	CC:2D:ED:0A:75:7F	wlan1	00:00:41	yes	yes	0.000	-42/-31	144.4Mbp...	130Mbps...

3 items

2 items

3:57 p. m.  
1/04/2019

# ELECTIVA DE REDES





Imagen 12

admin@6C:3B:6B:25:20:74 (MikroTik) - WinBox v6.43.8 on hAP lite (smips)

Session Settings Dashboard

Safe Mode Session: 6C:3B:6B:25:20:74

RouterOS WinBox

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
Bridge  
PPP  
Switch  
Mesh  
IP  
MPLS  
Routing  
System  
Queues  
Files  
Log  
RADIUS  
Tools  
New Terminal  
Make Supout.rtf  
Manual  
New WinBox  
Exit

Wireless Tables

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

WPS Client Setup Repeater Scanner Freq. Usage Alignment Wireless Sniffer Wireless Snooper

Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)
RS wlan1	Wireless (Atheros AR9...	1500		191.0 kbps	190.8 kbps	75	75	0 bps	190.8 kbps	0
DRS wds2	WDS	1500	44.0 kbps	148.7 kbps	39	36	0 bps	148.7 kbps	0	36

2 items out of 7 (1 selected)

7 items

3:58 p.m.  
1/04/2019

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