

# Administración Remota de varias redes WISP con Mikrotik

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Telecomunicaciones

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# Presentación Personal

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- Redes y Telecomunicaciones
- Certificaciones



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# Principales redes WISP que administramos

- 4 redes con mas de 100 domicilios cada una
- 2 a 5 dispositivos por CPE
- Mas de 1200 hosts gestionados
- Redes separadas geográficamente por mas de 400km

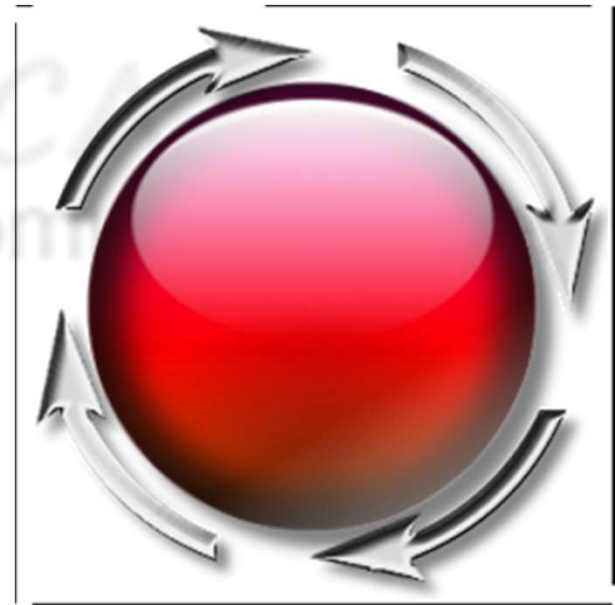
# Necesidades

- Monitoreo de la red
- Económico
- Avanzado
- Fácil de usar
- Acceso remoto
- Notificaciones en tiempo real
- Registro (log)

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# The dude

- Diagramas de la red
- SNMP
- Estado en tiempo real
- Notificaciones por Telegram
- Graficas de trafico
- Logs propios y remotos



# Desventajas de tener The dude dentro de la red

- Depende de hardware propio
- Si pierde internet, perdemos comunicación.
- No se podía garantizar el monitoreo de otros sitios

# Ventajas en un VPS

- Disponibilidad de conexión a internet
- 99.9% de SLA
- Ancho de banda alto
- Baja latencia
- Libre de Mantenimiento

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# ¿Que es un CHR?

- Cloud Hosted Router
- Es una versión RouterOS destinado a correr como una máquina virtual

## System Requirements

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Minimal requirements:

- 64bit CPU with virtualisation support
- 128 MB or more RAM for the CHR instance
- 128 MB disk space for the CHR virtual hard drive

CHR has been tested on the following platforms:

- VirtualBox 5 on Linux and OS X
- VMWare Fusion 7 and 8 on OS X
- Qemu 2.4.0.1 on OS X



# Ventajas de un CHR

- Ip publicas
- Servidor VPN
- Servidor para btest
- Soporte para DUDE
- Hardware independiente del nuestro
- Siempre activo
- Siempre conectado a internet
- Seguridad

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**Resources**

Uptime: 23:09:33

Free Memory: 1863.8 MiB

Total Memory: 1935.3 MiB

CPU: Intel

CPU Count: 1

CPU Frequency: 2394 MHz

CPU Load: 4%

Free HDD Space: 9.9 GiB

Total HDD Size: 9.9 GiB

Sector Writes Since Reboot: 11 680 944

Total Sector Writes: 11 680 945

Architecture Name: x86\_64

Board Name: CHR

Version: 6.39.1 (stable)

Build Time: May/03/2017 08:17:10

**Package List**

Name	Version	Build Time	Status
dude	6.39.1	May/03/2017 08:17:10	
routeros-x86	6.39.1	May/03/2017 08:17:10	
advancedt...	6.39.1	May/03/2017 08:17:10	
dhcp	6.39.1	May/03/2017 08:17:10	
hotspot	6.39.1	May/03/2017 08:17:10	
ipv6	6.39.1	May/03/2017 08:17:10	
mpls	6.39.1	May/03/2017 08:17:10	
ppp	6.39.1	May/03/2017 08:17:10	
routing	6.39.1	May/03/2017 08:17:10	
security	6.39.1	May/03/2017 08:17:10	
system	6.39.1	May/03/2017 08:17:10	
ups	6.39.1	May/03/2017 08:17:10	
wireless	6.39.1	May/03/2017 08:17:10	
user-manager	6.39.1	May/03/2017 08:17:10	

Session Settings Dashboard

Session: chr.jafica.com

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Mesh
- IP
- IPv6
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- Dude
- Make Supout.rf
- Manual
- New WinBox
- Exit

Name	Type	Actual MTU	L2 MTU
DR <<><l2tp-cuautla-1>	L2TP Server Binding	1450	
DR <<><l2tp-miriam>	L2TP Server Binding	1450	
DR <<><l2tp-papagayos>	L2TP Server Binding	1450	
DR <<><pptp-abuelito_mk>	PPTP Server Binding	1450	
DR <<><pptp-cuautla2>	PPTP Server Binding	1450	
DR <<><pptp-integral>	PPTP Server Binding	1450	
DR <<><pptp-netmetalcuema>	PPTP Server Binding	1450	
DR <<><pptp-pungarabato>	PPTP Server Binding	1450	
DR <<><pptp-rey>	PPTP Server Binding	1450	
DR <<><pptp-snwf>	PPTP Server Binding	1450	
R <<>ether1	Ethernet	1500	

# Instalación The dude en un CHR

- Descargar el paquete
- Subirlo al Equipo (ftp,sftp,winbox,webig)
- Reiniciar.
- verificar

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# Verificar en Package List

The screenshot shows the Mikrotik WinBox interface. On the left, the 'System' menu item is highlighted in yellow. Below it, the 'Packages' sub-menu is also highlighted. The main window displays the 'Package List' window, which contains a table of installed packages. The table has four columns: Name, Version, Build Time, and Scheduled. The 'dude' package is highlighted in yellow.

Name	Version	Build Time	Scheduled
dude	6.39.1	May/03/2017 08:17:10	
routeros-x86	6.39.1	May/03/2017 08:17:10	
advanced-tools	6.39.1	May/03/2017 08:17:10	
dhcp	6.39.1	May/03/2017 08:17:10	
hotspot	6.39.1	May/03/2017 08:17:10	
ipv6	6.39.1	May/03/2017 08:17:10	
mpls	6.39.1	May/03/2017 08:17:10	
ppp	6.39.1	May/03/2017 08:17:10	
routing	6.39.1	May/03/2017 08:17:10	
security	6.39.1	May/03/2017 08:17:10	
system	6.39.1	May/03/2017 08:17:10	
ups	6.39.1	May/03/2017 08:17:10	
wireless	6.39.1	May/03/2017 08:17:10	
user-manager	6.39.1	May/03/2017 08:17:10	

# Conexión de las redes al CHR

## **PPTP**

- Fácil de implementar
- No requiere hardware
- Bloqueo por parte de operadores móviles
- Bajo nivel de seguridad

## **L2TP IPSEC**

- Fácil de implementar
- Compatible con la mayoría de dispositivos móviles
- Requiere mas pasos en la configuración
- Mayor seguridad
- Permite el uso de VPN en equipos Apple

# VPN

PPP

Interface PPPoE Servers Secrets Profiles Active Connections L2TP Secrets

PPP Scanner PPTP Server SSTP Server L2TP Server OVPN Server PPPoE Scan

	Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p
DR	<<<12tp-cuautla>	L2TP Server Binding	1450		16.6 kbps	17.2 kbps	
DR	<<<12tp-miriam>	L2TP Server Binding	1450		0 bps	0 bps	
DR	<<<12tp-papagayos>	L2TP Server Binding	1450		29.5 kbps	339.4 kbps	
DR	<<<pptp-abuelito_mk>	PPTP Server Binding	1450		0 bps	0 bps	
DR	<<<pptp-cuautla2>	PPTP Server Binding	1450		288 bps	256 bps	
DR	<<<pptp-integral>	PPTP Server Binding	1450		0 bps	3.1 kbps	
DR	<<<pptp-netmetalcuema>	PPTP Server Binding	1450		0 bps	0 bps	
DR	<<<pptp-pungarabato>	PPTP Server Binding	1450		0 bps	0 bps	
DR	<<<pptp-rey>	PPTP Server Binding	1450		0 bps	0 bps	
DR	<<<pptp-snwf>	PPTP Server Binding	1450		1152 bps	1024 bps	
DR	<<<pptp-uni-durango>	PPTP Server Binding	1450		0 bps	0 bps	

CHR

PPP

Interface PPPoE Servers Secrets Profiles Active C

PPP Scanner

	Name	Type
R	<<<chr.jafica.com	PPTP C
R	<<<jafica.com	PPTP C

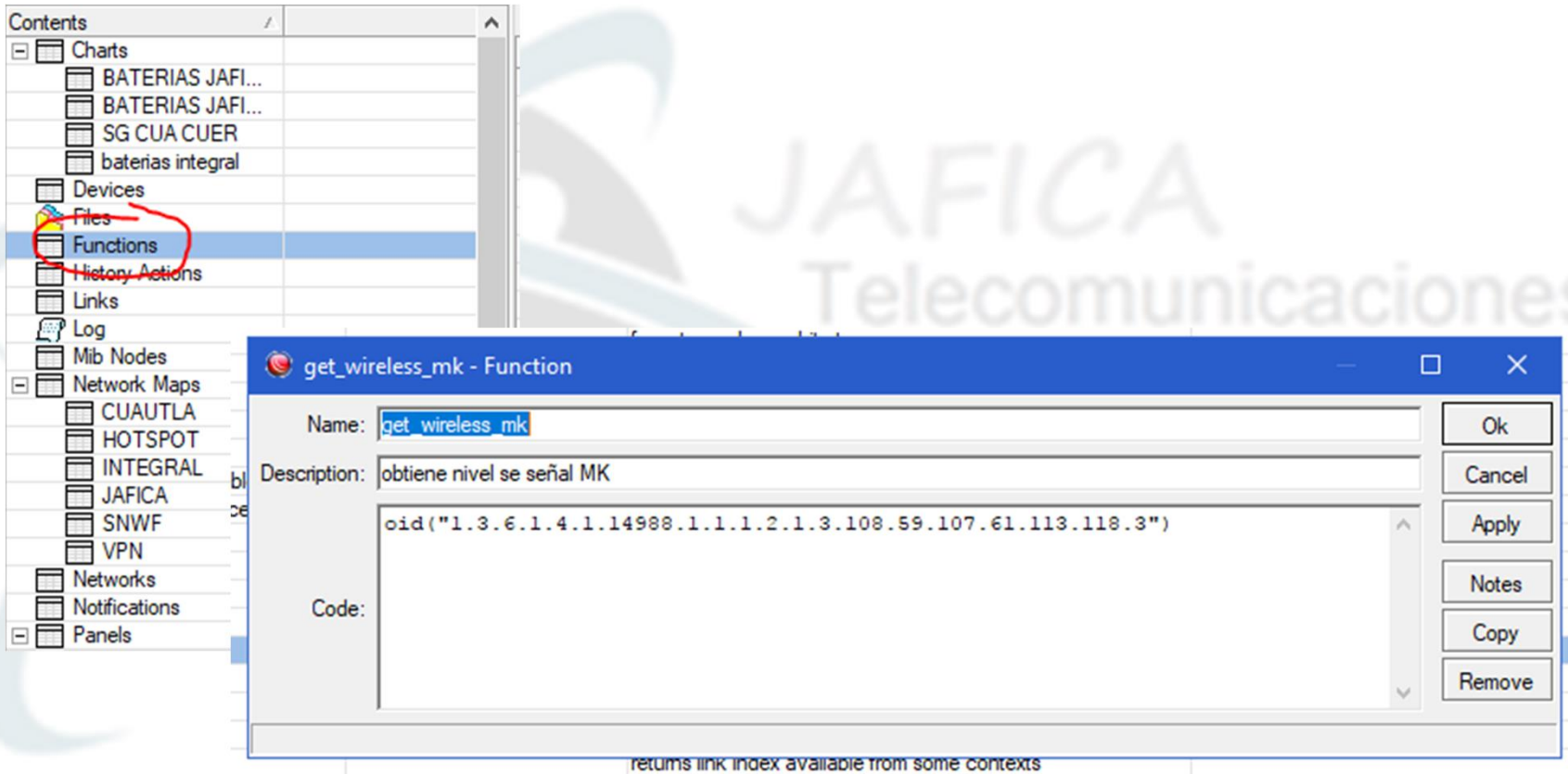
ROUTER DE BORDE

# Monitoreo del estado de un enlace

- SNMP activado en el equipo
- Obtener el valor OID

```
[jaime@NETMETAL CUERNAVACA] /interface wireless> print oid
0 tx-rate=.1.3.6.1.4.1.14988.1.1.1.3.1.2.3 rx-rate=.1.3.6.1.4.1.14988.1.1.1.3.1.3.3
  ssid=.1.3.6.1.4.1.14988.1.1.1.3.1.4.3 bssid=.1.3.6.1.4.1.14988.1.1.1.3.1.5.3
  client-count=.1.3.6.1.4.1.14988.1.1.1.3.1.6.3 frequency=.1.3.6.1.4.1.14988.1.1.1.3.1.7.3
  band=.1.3.6.1.4.1.14988.1.1.1.3.1.8.3 noise-floor=.1.3.6.1.4.1.14988.1.1.1.3.1.9.3
  overall-ccq=.1.3.6.1.4.1.14988.1.1.1.3.1.10.3
```

# Creación de función en dude



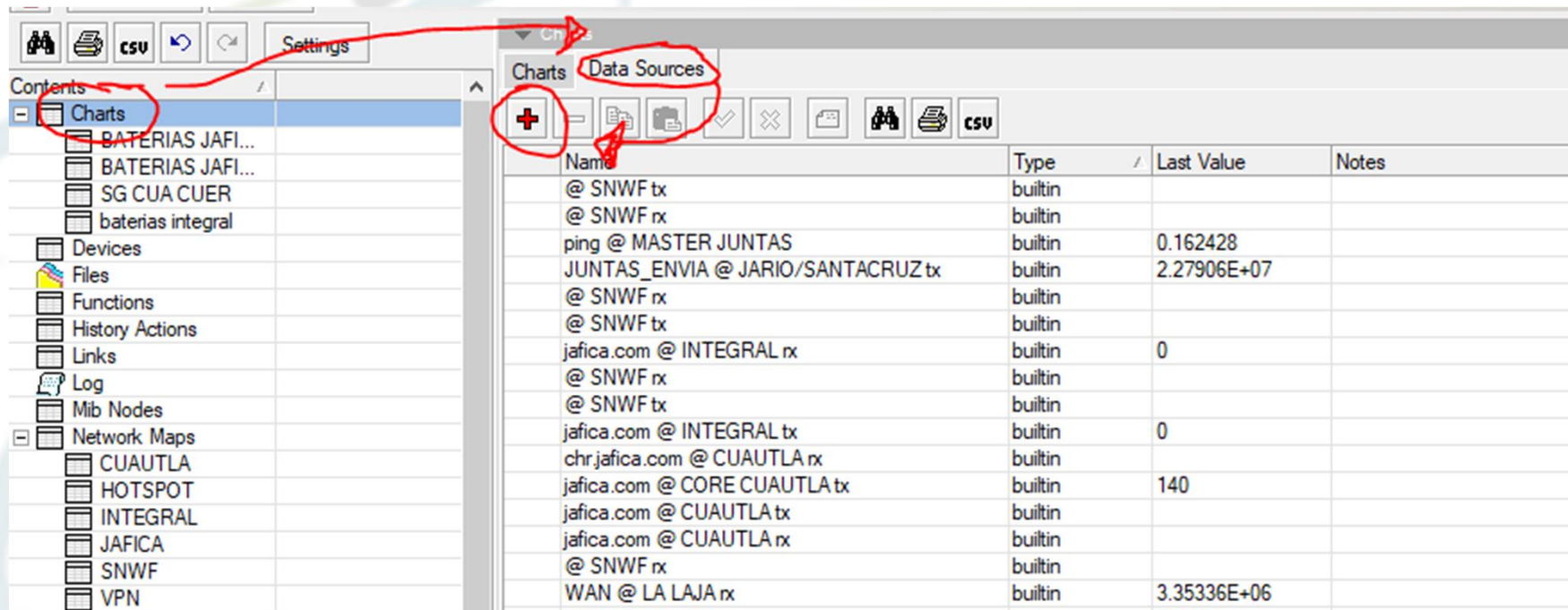
The image shows a network management interface with a 'Contents' sidebar on the left. The 'Functions' category is highlighted with a red circle. A dialog box titled 'get\_wireless\_mk - Function' is open in the foreground, containing the following information:

- Name: `get_wireless_mk`
- Description: `obtiene nivel se señal MK`
- Code: `oid("1.3.6.1.4.1.14988.1.1.1.2.1.3.108.59.107.61.113.118.3")`

On the right side of the dialog box, there are buttons for 'Ok', 'Cancel', 'Apply', 'Notes', 'Copy', and 'Remove'. At the bottom of the dialog, there is a small text note: 'returns link index available from some contexts'.



# Creación del Origen de datos



The screenshot shows a network management interface with a 'Contents' sidebar on the left and a main panel on the right. The 'Charts' folder is selected in the sidebar. The main panel has a 'Charts' tab and a 'Data Sources' tab. The 'Data Sources' tab is active, showing a table of monitoring items. A red circle highlights the '+' icon in the toolbar, and another red circle highlights the 'Data Sources' tab label. A red arrow points from the 'Charts' folder in the sidebar to the '+' icon.

Name	Type	Last Value	Notes
@ SNWF tx	builtin		
@ SNWF rx	builtin		
ping @ MASTER JUNTAS	builtin	0.162428	
JUNTAS_ENVIA @ JARIO/SANTACRUZ tx	builtin	2.27906E+07	
@ SNWF rx	builtin		
@ SNWF tx	builtin		
jafica.com @ INTEGRAL rx	builtin	0	
@ SNWF rx	builtin		
@ SNWF tx	builtin		
jafica.com @ INTEGRAL tx	builtin	0	
chr.jafica.com @ CUAUTLA rx	builtin		
jafica.com @ CORE CUAUTLA tx	builtin	140	
jafica.com @ CUAUTLA tx	builtin		
jafica.com @ CUAUTLA rx	builtin		
@ SNWF rx	builtin		
WAN @ LA LAJA rx	builtin	3.35336E+06	

# Origen de datos

enlac\_cuerna - Data Source

General Chart

Enabled

Name: enlac\_cuerna

Unit: dbm

Device: NETMETAL CUERNAVACA

Code: get\_wireless\_mk()

Interval: 00:00:05

Last Value Time: 17:52:23

Last Value: -51

Settings that control how much detail is stored for how long time

Raw Value Keep Time: default

10 Min Value Keep Time: default

2 Hour Value Keep Time: default

1 Day Value Keep Time: default

Approximate Storage Size: 28.8 kB

Ok  
Cancel  
Apply  
Notes  
Remove

aciones

# Creación de la Grafica

The screenshot displays a software interface for creating charts. The main window has a 'Charts' panel with a red circle around the '+' icon. Below it is a table of existing charts:

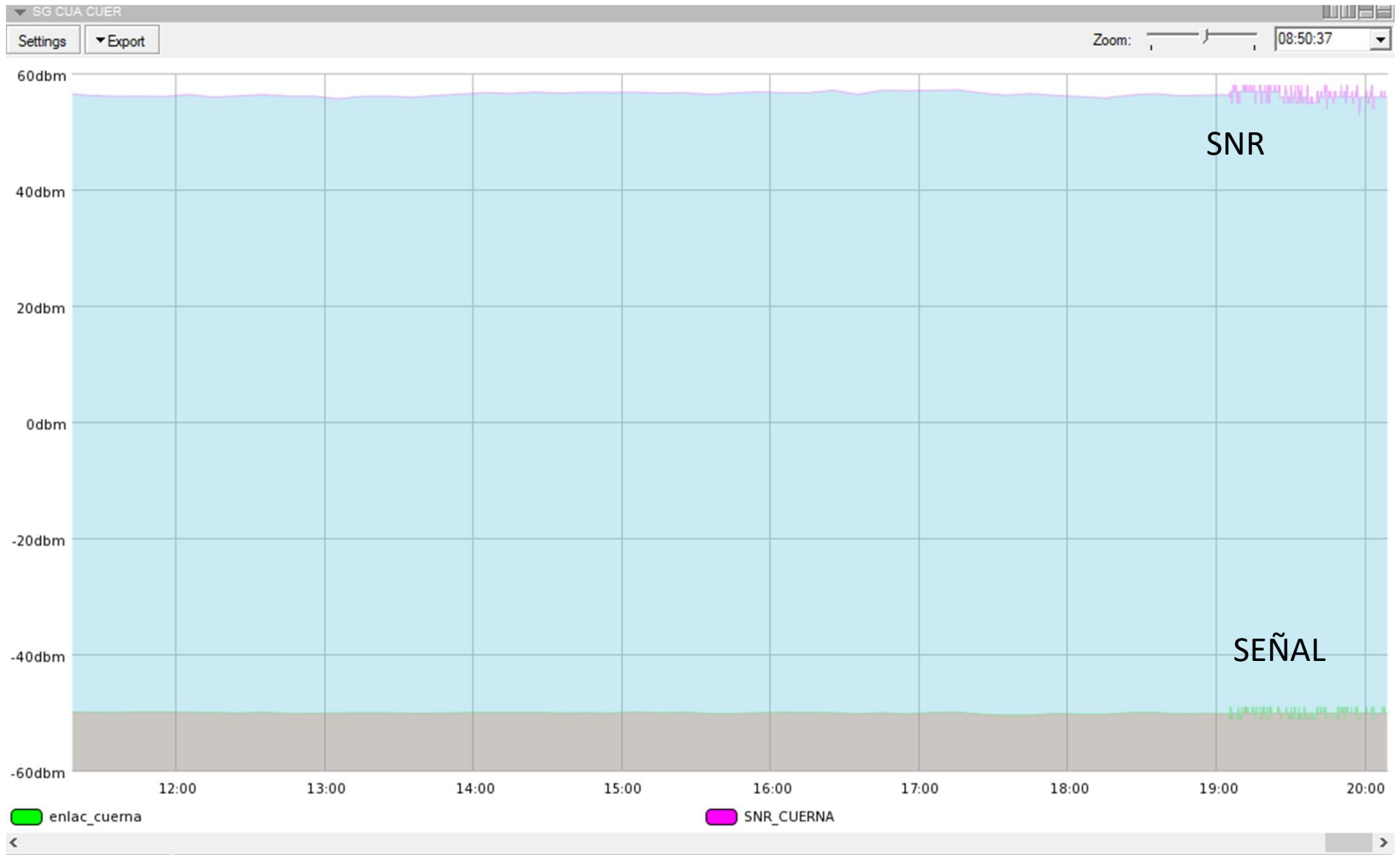
Name	Notes
BATERIAS JAFICA 12V	
BATERIAS JAFICA 24V	
SG CUA CUER	
baterias integral	

A dialog box titled 'SG CUA CUER - Chart' is open, showing the name 'SG CUA CUER' and a table of data sources. The dialog box has a red circle around its '+' icon. The table of data sources is:

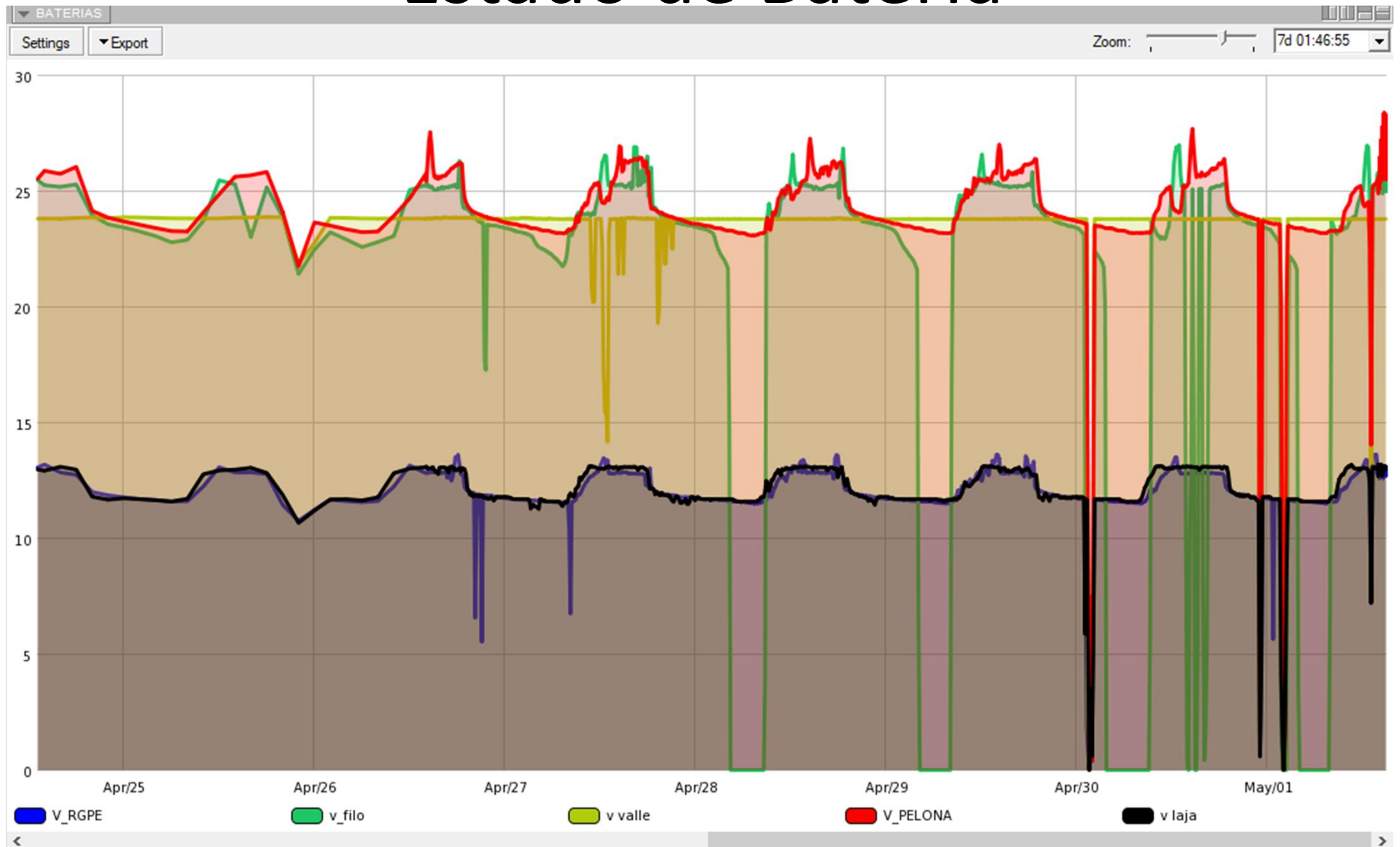
#	Source	Notes
1	enlac_cuema	
2	SNR_CUERNA	

The dialog box also includes buttons for 'Ok', 'Cancel', 'Apply', 'Notes', 'Copy', and 'Remove'.

# Grafica del enlace

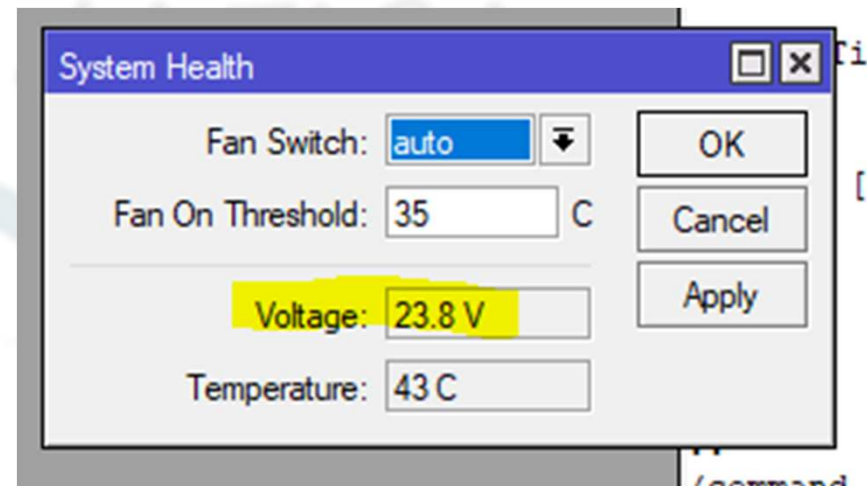


# Estado de Bateria



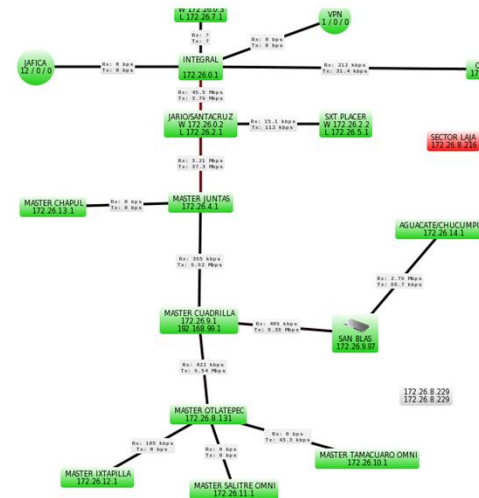
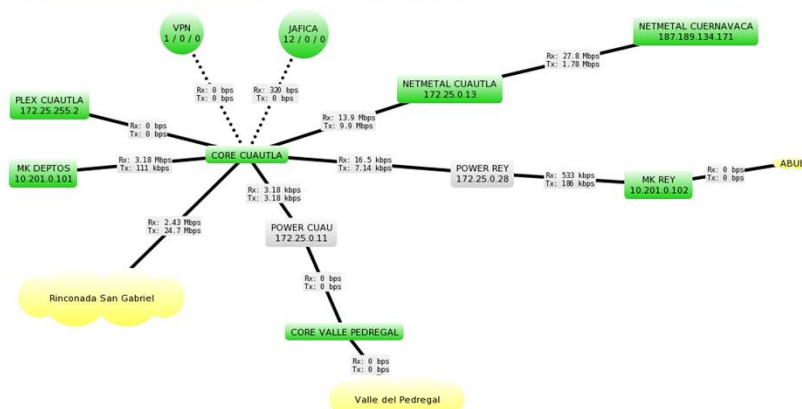
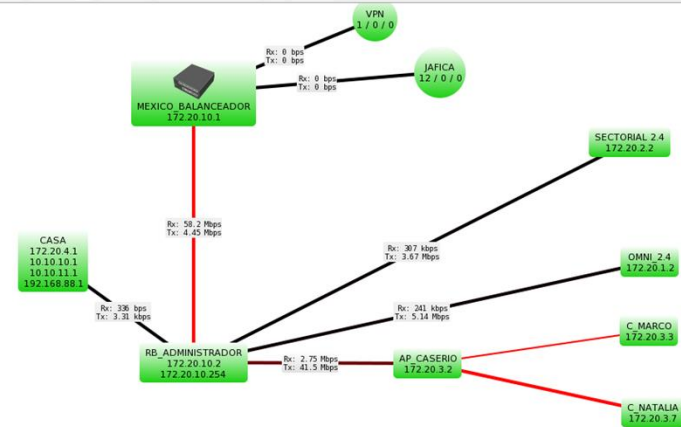
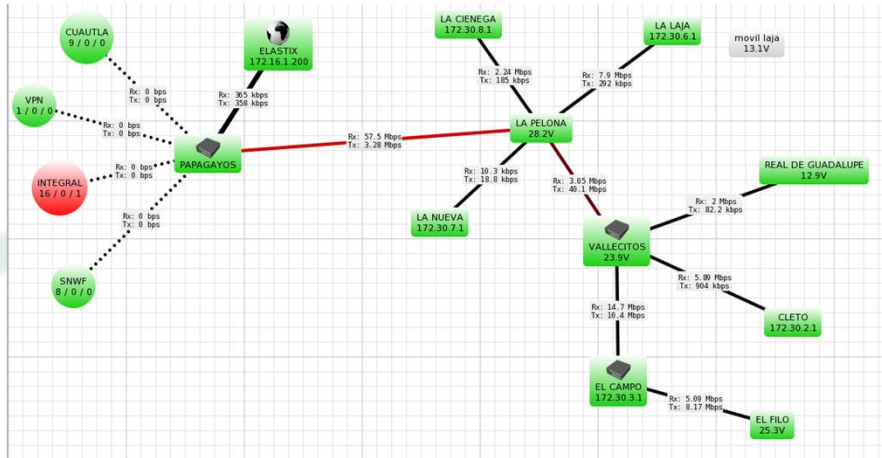
# Requisitos para Monitorear Baterías

- Solamente es posible en equipos con Monitor de voltaje.
- RB750up
- Powerbox
- Mantbox
- RB Metal

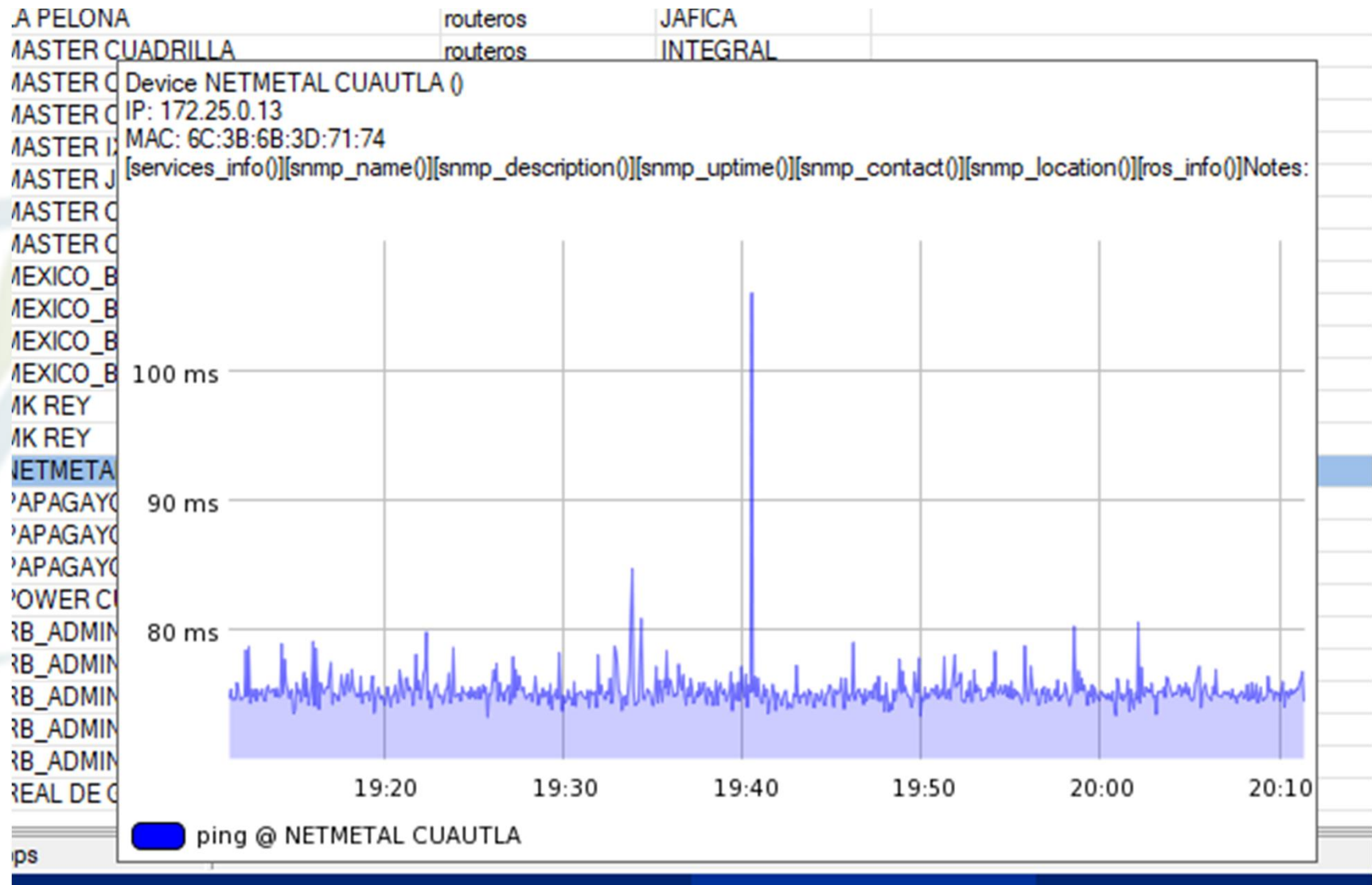


Supported input voltage	9 V - 30 V
PoE in	Yes
Voltage Monitor	Yes
PCB temperature monitor	Yes
Dimensions	177x44x44mm, 193g

# Diagramas de la red



# Estado de Ping a dispositivos





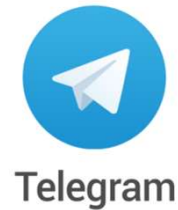
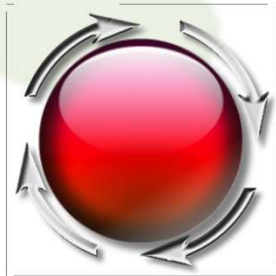
# Registros del LOG

Apr/26 21:55:28	syslog: Service ping on AGUACATE/CHUCUMPUM is now down (timeout)
Apr/26 21:56:40	syslog: Service ping on AGUACATE/CHUCUMPUM is now up ()
Apr/27 12:53:18	syslog: Service bajo Voltaje 24 on VALLECITOS is now down (statement 121 > 200 not true)
Apr/27 12:54:03	syslog: Service bajo Voltaje 24 on VALLECITOS is now up ()
Apr/27 12:59:33	syslog: Service bajo Voltaje 24 on VALLECITOS is now down (statement 115 > 200 not true)
Apr/27 12:59:48	syslog: Service bajo Voltaje 24 on VALLECITOS is now up ()
Apr/27 19:17:33	syslog: Service bajo Voltaje 24 on VALLECITOS is now down (statement 109 > 200 not true)
Apr/27 19:17:53	syslog: Service bajo Voltaje 24 on VALLECITOS is now up ()
Apr/28 04:19:44	syslog: Service ping on EL FILO is now down (ICMP error received (6)TTL exceeded)
Apr/28 08:45:43	syslog: Service ping on EL FILO is now up ()
Apr/29 00:01:19	syslog: Service ping on AGUACATE/CHUCUMPUM is now down (timeout)

Apr/30 15:13:54	syslog: Service ping on EL FILO is now up ()
Apr/30 15:55:46	syslog: Service ping on EL FILO is now down (ICMP error received (6)TTL exceeded)
Apr/30 16:02:34	syslog: Service ping on EL FILO is now up ()
Apr/30 16:09:41	syslog: Service ping on EL FILO is now down (ICMP error received (6)TTL exceeded)
Apr/30 16:14:54	syslog: Service ping on EL FILO is now up ()
Apr/30 16:25:01	syslog: Service ping on EL FILO is now down (ICMP error received (6)TTL exceeded)
Apr/30 16:27:15	syslog: Service ping on EL FILO is now up ()

# Notificaciones

- Registros en el log
- Correos electrónicos
- Mensajes instantáneos por telegram



# Notificaciones

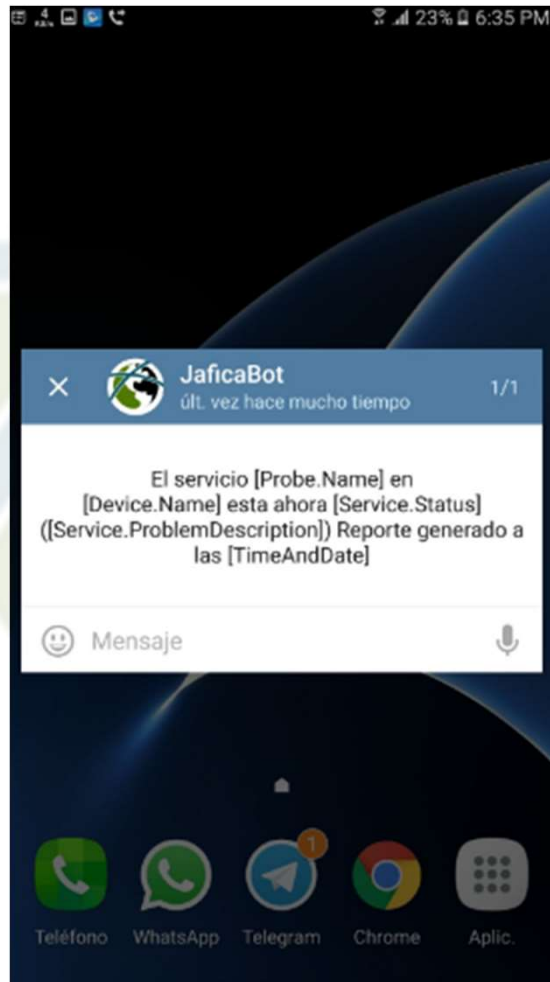
The screenshot displays a network management application with a sidebar on the left and a main configuration window on the right. In the sidebar, the 'Notifications' folder is highlighted with a red circle. The main window, titled 'TELEGRAM JAIME - Notification', has the 'General' tab selected. It shows the following configuration:

- Name: TELEGRAM JAIME
- Enabled:
- Type: execute on server
- Command: 

```
/tool fetch
url="https://api.telegram.org/bot333525869:AAH52m
XqyPm3UYIqXpI7oGr59KU18qeUugM/sendMessage?
chat_id=36842695&parse_mode=HTML&text=El servicio
[Probe.Name] en <b>[Device.Name]</b> esta ahora
<b>[Service.Status]
([Service.ProblemDescription]) </b><pre>Reporte
generado a las [TimeAndDate]</pre>" keep-
result=no
```

On the right side of the configuration window, there are buttons for 'Ok', 'Cancel', 'Apply', 'Notes', 'Copy', 'Remove', and 'Test'. A red circle in the top toolbar of the main application highlights a plus sign icon, indicating the action to add a new notification.

# Notificación en el Celular



# Gestión de clientes residenciales

- Llevar un registro detallado de pagos
- Relación de equipo-cliente
- Cortar servicio a clientes morosos
- Activar servicio a clientes que ya pagaron

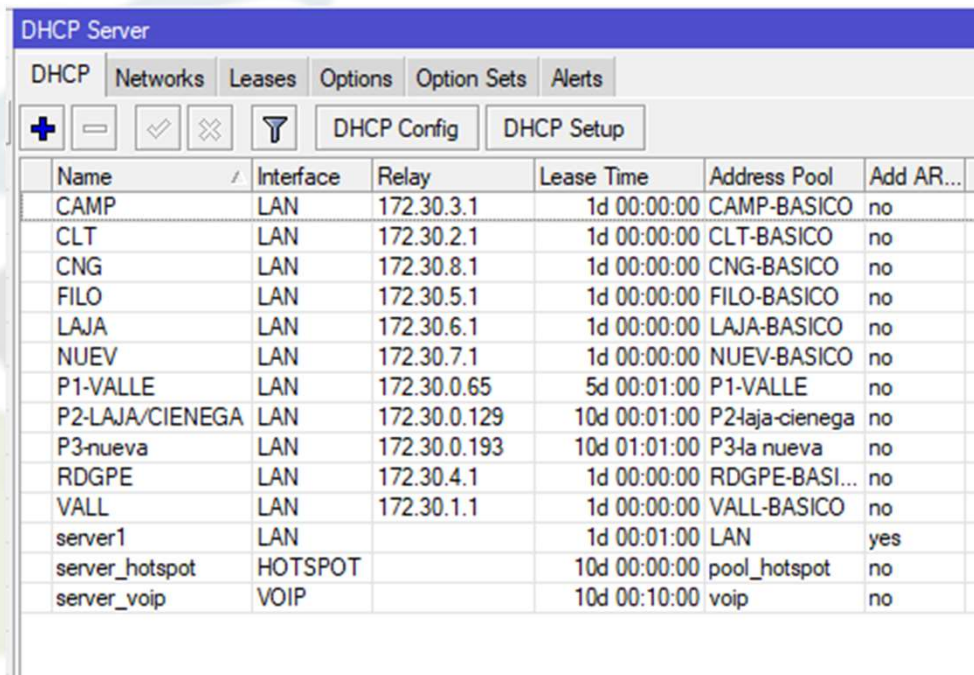
# Configuración en Mikrotik

- Pool para clientes (básico, plus, morosos)
- Nodo principal tiene todos los DHCP servers
- Nodos secundarios hacen DHCP Relay
- Ventajas:
  - Fácil de buscar leases en el Mikrotik de borde
  - Address list para mensajes al cliente

# Pools para servicios

IP Pool	
Pools Used Addresses	
Name	Addresses
CAMP-BASICO	172.30.3.10-172.30.3.127
CAMP-MOROSO	172.30.3.240-172.30.3.254
CAMPO-PLUS	172.30.3.128-172.30.3.239
CLT-BASICO	172.30.2.10-172.30.2.127
CLT-MOROSO	172.30.2.240-172.30.2.254
CLT-PLUS	172.30.2.128-172.30.2.239
CNG-BASICO	172.30.8.10-172.30.8.127
CNG-MOROSO	172.30.8.240-172.30.8.254
CNG-PLUS	172.30.8.128-172.30.8.239
FILO-BASICO	172.30.5.10-172.30.5.127
FILO-MOROSO	172.30.5.240-172.30.5.254
FILO-PLUS	172.30.5.128-172.30.5.239
LAJA-BASICO	172.30.6.10-172.30.6.127
LAJA-MOROSO	172.30.6.240-172.30.6.254
LAJA-PLUS	172.30.6.128-172.30.6.239
LAN	172.30.0.10-172.30.0.30
LOCAL	172.30.0.34-172.30.0.62
NUEV-BASICO	172.30.7.10-172.30.7.127
NUEV-MOROSO	172.30.7.240-172.30.7.254
NUEV-PLUS	172.30.7.128-172.30.7.239
P1-VALLE	172.30.0.70-172.30.0.126
P2-laja-cienega	172.30.0.140-172.30.0.190
P3-laja nueva	172.30.0.200-172.30.0.254
RDGPE-BASICO	172.30.4.10-172.30.4.127
RDGPE-MOROSO	172.30.4.240-172.30.4.254
RDGPE-PLUS	172.30.4.128-172.30.4.239
VALL-BASICO	172.30.1.11-172.30.1.127
VALL-MOROSO	172.30.1.240-172.30.1.254
VALL-PLUS	172.30.1.128-172.30.1.239

# Servidores DHCP



Name	Interface	Relay	Lease Time	Address Pool	Add AR...
CAMP	LAN	172.30.3.1	1d 00:00:00	CAMP-BASICO	no
CLT	LAN	172.30.2.1	1d 00:00:00	CLT-BASICO	no
CNG	LAN	172.30.8.1	1d 00:00:00	CNG-BASICO	no
FILO	LAN	172.30.5.1	1d 00:00:00	FILO-BASICO	no
LAJA	LAN	172.30.6.1	1d 00:00:00	LAJA-BASICO	no
NUEV	LAN	172.30.7.1	1d 00:00:00	NUEV-BASICO	no
P1-VALLE	LAN	172.30.0.65	5d 00:01:00	P1-VALLE	no
P2-LAJA/CIENEGA	LAN	172.30.0.129	10d 00:01:00	P2-laja-cienega	no
P3-nueva	LAN	172.30.0.193	10d 01:01:00	P3-la nueva	no
RDGPE	LAN	172.30.4.1	1d 00:00:00	RDGPE-BASI...	no
VALL	LAN	172.30.1.1	1d 00:00:00	VALL-BASICO	no
server1	LAN		1d 00:01:00	LAN	yes
server_hotspot	HOTSPOT		10d 00:00:00	pool_hotspot	no
server_voip	VOIP		10d 00:10:00	voip	no



# Registro lease

DHCP Lease <VALL-BASICO,172.30.1.62>

General Active

Address: VALL-BASICO

MAC Address: 04:18:D6:84:AD:CD

Use Src. MAC Address

Client ID: 1:4:18:d6:84:ad:cd

Server: VALL

Lease Time: 08:20:00

Block Access

Always Broadcast

DHCP Options:

DHCP Option Set:

Rate Limit:

Insert Queue Before: first

Address List: aviso

OK

Cancel

Apply

Disable

Comment

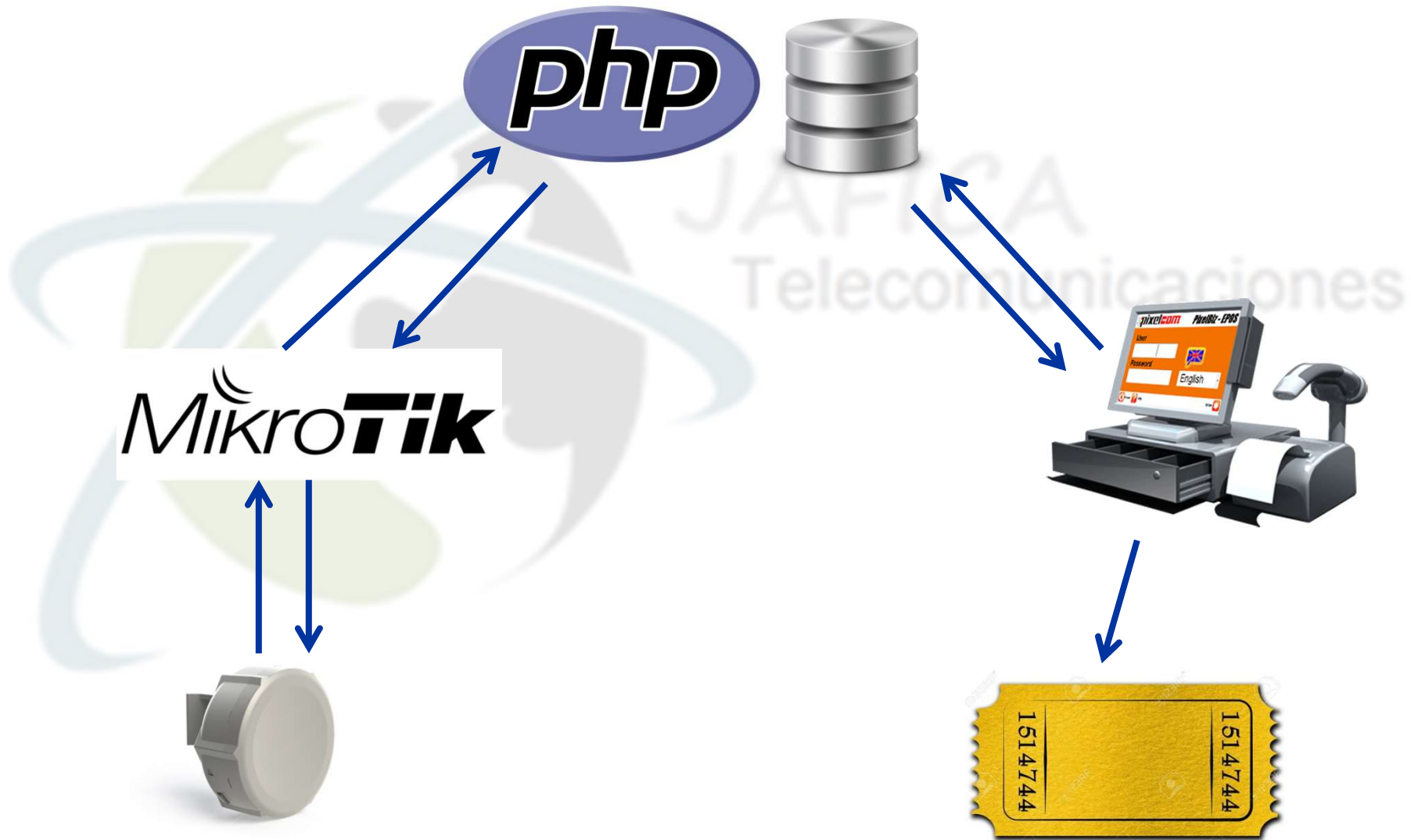
Copy

Remove

Check Status

enabled radius blocked bound

# Diagrama de administración de Clientes



# Script para DHCP

Script <DHCP>

Name:

Owner:

Policy:

<input checked="" type="checkbox"/> ftp	<input type="checkbox"/> reboot
<input checked="" type="checkbox"/> read	<input checked="" type="checkbox"/> write
<input checked="" type="checkbox"/> policy	<input checked="" type="checkbox"/> test
<input checked="" type="checkbox"/> password	<input checked="" type="checkbox"/> sniff
<input checked="" type="checkbox"/> sensitive	<input checked="" type="checkbox"/> romon
<input type="checkbox"/> dude	

Last Time Started:

Run Count:

Source:

```
# reload-dhcp
log warning DHCP
/tool fetch
url=http://172.16.1.200/jafica/servers/dhcpv
alle.php dst-path=dhcp.rsc
/import dhcp.rsc
log warning "DHCP FINALIZADO"
```

Buttons: OK, Cancel, Apply, Comment, Copy, Remove, Run Script

```
# dhcp lease setup
/ip dhcp-server lease

:log warning "ADRIAN ROJAS ANZURES sn luis 10";
:log error "44:D9:E7:BC:09:41";
:local item [find mac-address="44:D9:E7:BC:09:41"]; :if (($
item!="")) do={make-static [find mac-address=
"44:D9:E7:BC:09:41"]; set address="FSG-CUA-BASICO" server=
"FSG-CUA" comment="ADRIAN ROJAS ANZURES sn luis 10"
lease-time="30000" address-lists="aviso" numbers=$item} else
={

    add mac-address="44:D9:E7:BC:09:41" address=
    "FSG-CUA-BASICO" lease-time="30000" server="FSG-CUA"
    comment="ADRIAN ROJAS ANZURES sn luis 10" address-lists=
    "aviso"}

:log warning "ADRIANA LUCERO PAZ SOSA SN FERNANDO 10";
:log error "44:D9:E7:C8:5C:63";
:local item [find mac-address="44:D9:E7:C8:5C:63"]; :if (($
item!="")) do={make-static [find mac-address=
"44:D9:E7:C8:5C:63"]; set address="FSG-CUA-BASICO" server=
"FSG-CUA" comment="ADRIANA LUCERO PAZ SOSA SN FERNANDO 10"
lease-time="90000" address-lists="" numbers=$item} else={
```

# Mensajes a Usuarios a través de WebProxy, address list y firewall

- Próximo a vencer
- Ultimo de día de pago
- Servicio Suspendido
- Avisos Promocionales

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# Configuración de Webproxy

Web Proxy Settings

General Status Lookups Inserts Refreshes

Enabled

Src. Address: ::

Port: 8082

8081

8085

Anonymous

Parent Proxy:

Parent Proxy Port:

Cache Administrator: webmaster

Max. Cache Size: none KB

Max Cache Object Size: 2048 KB

Cache On Disk

Max. Client Connections: 600

Max. Server Connections: 600

Max Fresh Time: 3d 00:00:00

Serialize Connections

Always From Cache

Cache Hit DSCP (TOS): 4

Cache Path: web-proxy

passthrough

OK

Cancel

Apply

Clear Cache

Reset HTML

Access

Cache

Direct

Connections

Cache Contents

Web Proxy Access

+ - ✓ ✗ 📁 🗑️

00 Reset Counters 00 Reset All Counters

#	Src. Address	Dst. Address	Dst. Port	Local Port	Dst. Host
0	🟢			8082	!172.16.1.200/jafica/servers/valle/ficha.php
1	🟢			8081	!172.16.1.200/jafica/servers/valle/aviso.php
2	🟢			8085	!172.16.1.200/jafica/error/no_pago.php

Web Proxy Rule <>

Src. Address:

Dst. Address:

Dst. Port:

Local Port:  8085

Dst. Host: ! 172.16.1.200/jafica/error/no\_pago.php

Path:

Method:

Action: deny

Redirect To: 172.16.1.200/jafica/error/no\_pago.php

Hits: 220675

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Reset Counters

Reset All Counters

enabled

# Firewall Filter

::: MOROSOS										
2	✓ accept	forward			1 (icmp)				720 B	12
3	✓ accept	forward			6 (tcp)	80			208 B	4
4	✓ accept	forward			17 (udp)	53			0 B	0
5	✓ accept	forward	172.16.1.200		6 (tcp)	8080,9080,21,22,8443,80,9081			9.3 KiB	31
6	✗ drop	forward							122.9 KiB	1 145

- Se acepta ping
- Acepta puerto 80 para proxy
- Acepta udp 53 dns
- se bloquean puertos

# Firewall NAT

::: MOROSOS												
16	✓ accept	dstnat		172.16.1.200	6 (tcp)	80			morosos		2688.4 KiB	38 672
17	⇐ redirect	dstnat			6 (tcp)	80			morosos	8085	12.0 MiB	155 914
::: ULTIMO												
18	✓ accept	dstnat		172.16.1.200	6 (tcp)	80			ficha		60.3 KiB	860
19	⇐ redirect	dstnat			6 (tcp)	80			ficha	8082	755.0 KiB	8 811
::: AVISO												
20	✓ accept	dstnat		172.16.1.200	6 (tcp)	80			aviso		74.9 KiB	1 243
21	⇐ redirect	dstnat			6 (tcp)	80			aviso	8081	724.3 KiB	9 104

- Acepta el address lits con destino al servidor
- 80 => 8081,8082,8085

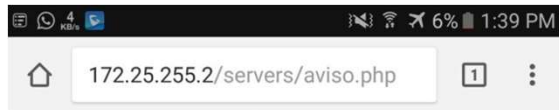
# Firewall Mangle

#	Action	Chain	Src. Address	Dst. Address	Protocol	Src. P...	Dst. Port	In. Interf...	Out. Interface	Packet M...	C...	Src. Addre...	Per Connection ...	New Packe...	New
::: aceptar para el webproxy															
3	✓ acc...	prerouting			6 (tcp)		80					morosos			
4	✓ acc...	prerouting			6 (tcp)		80					aviso			
5	✓ acc...	prerouting			6 (tcp)		80					ficha			

- Regla antes del Balanceo de conexiones.



# Mensajes a los usuarios

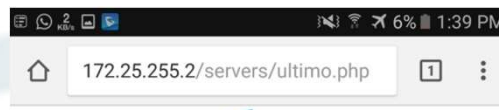


**Estimado cliente, .... le informamos que la fecha limite del pago de su mensualidad esta por vencer**

Recuerde enviar su pago al correo [pagos@jafica.com](mailto:pagos@jafica.com) y al whatsapp  
Horario de atencion 9am - 9pm lun-vier



**El aviso se cerrara automaticamente**  
Cerrar Aviso

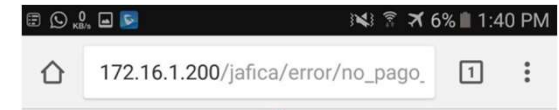


**Estimado cliente . .... le informamos que hoy Viernes 05 de Mayo del 2017 es el ultimo dia de pago, sin que se corte su servicio**

No olvide, horario de atencion 9am a 9pm, lunes a viernes.



**El aviso se cerrara automaticamente**  
Cerrar Aviso



## **SERVICIO SUSPENDIDO**



**Estimado Cliente, su servicio ha sido suspendido por la falta de su pago, para seguir disfrutando de su servicio, le sugerimos realizar su pago a la brevedad.**

**Si ya realizo su pago, porfavor envie un mensaje en whatsapp al 700 507 6007**

The logo features a stylized globe in shades of green and blue, with a grey satellite dish or antenna shape overlaid on it. The text 'JAFICA Telecomunicaciones' is positioned to the right of the globe.

**¿Preguntas?**

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# Gracias



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