

# mum

MikroTik User Meeting  
Bolivia. November 2014



## BIENVENIDOS A SANTA CRUZ - BOLIVIA



ESPECIALISTAS EN REDES Y TELECOMUNICACIONES

# Agenda

- Presentación
  - Writel Bolivia S.R.L y Academy Xperts
- Necesidad
- Caso de Éxito.: Parte 1
- Sitios
- Procedimientos
- Resultados
- Lo que se viene.....Parte 2



Ing. José A. García D.  
MUM-BOLIVIA 2014



# Presentación

## José Alfredo García D.

*Ing. Redes y Telecomunicaciones*

- ❖ Consultor MikroTik
- ❖ Certificaciones: MTCNA-MTCTCE-MTCWE-MTCUME-MTCRE-MTCINE
- ❖ Trainer Academia MikroTik (UDABOL, UTEPSA, UDI), ACTR0076
- ❖ Experiencia en RouterOS desde 2011

## Writel Bolivia S.R.L , CEO y FOUNDER

- ❖ Máster Distribuidor MikroTik
- ❖ Partner Academy Xperts , desde Enero 2013
- ❖ Centro de Entrenamiento
- ❖ Soporte
- ❖ Consultoría



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# Necesidad

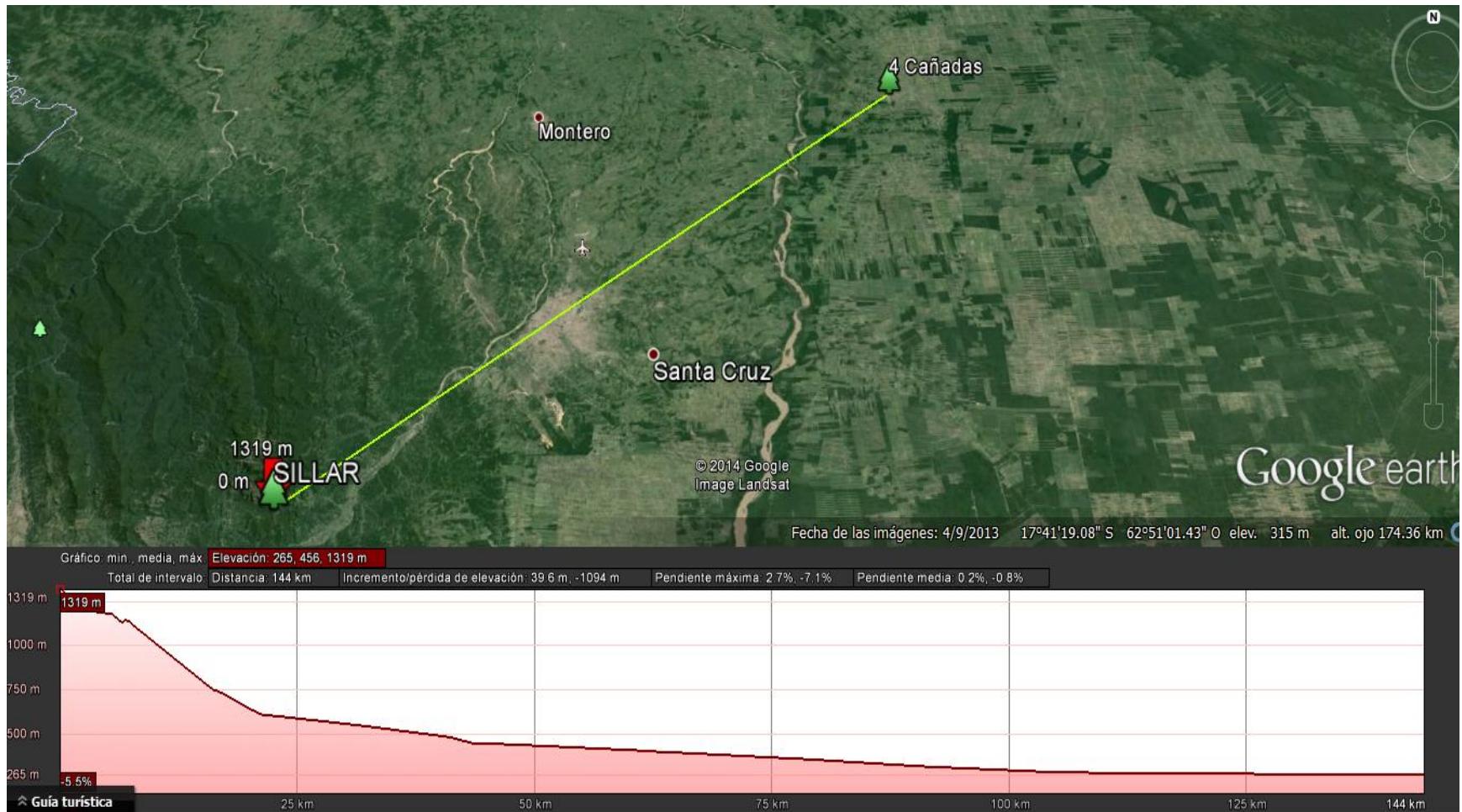
- La Cooperativa Xsus , desea interconectar su red de datos y telefonía a través de un Enlace Troncal desde la ciudad de Sucre hasta el Municipio de 4 Cañadas Ubicada en la provincia Ñuflo de Chávez(Santa Cruz).
- Se tiene una Repetidora en el Cerro del Sillar que interconectan varias localidades de El Torno , Angostura , Samaipata, etc.Esto está ubicado en el DPTO de Santa Cruz , Municipio de El Torno.
- El ancho de Banda requerido es de 4 MB.
- Soporte 24/7

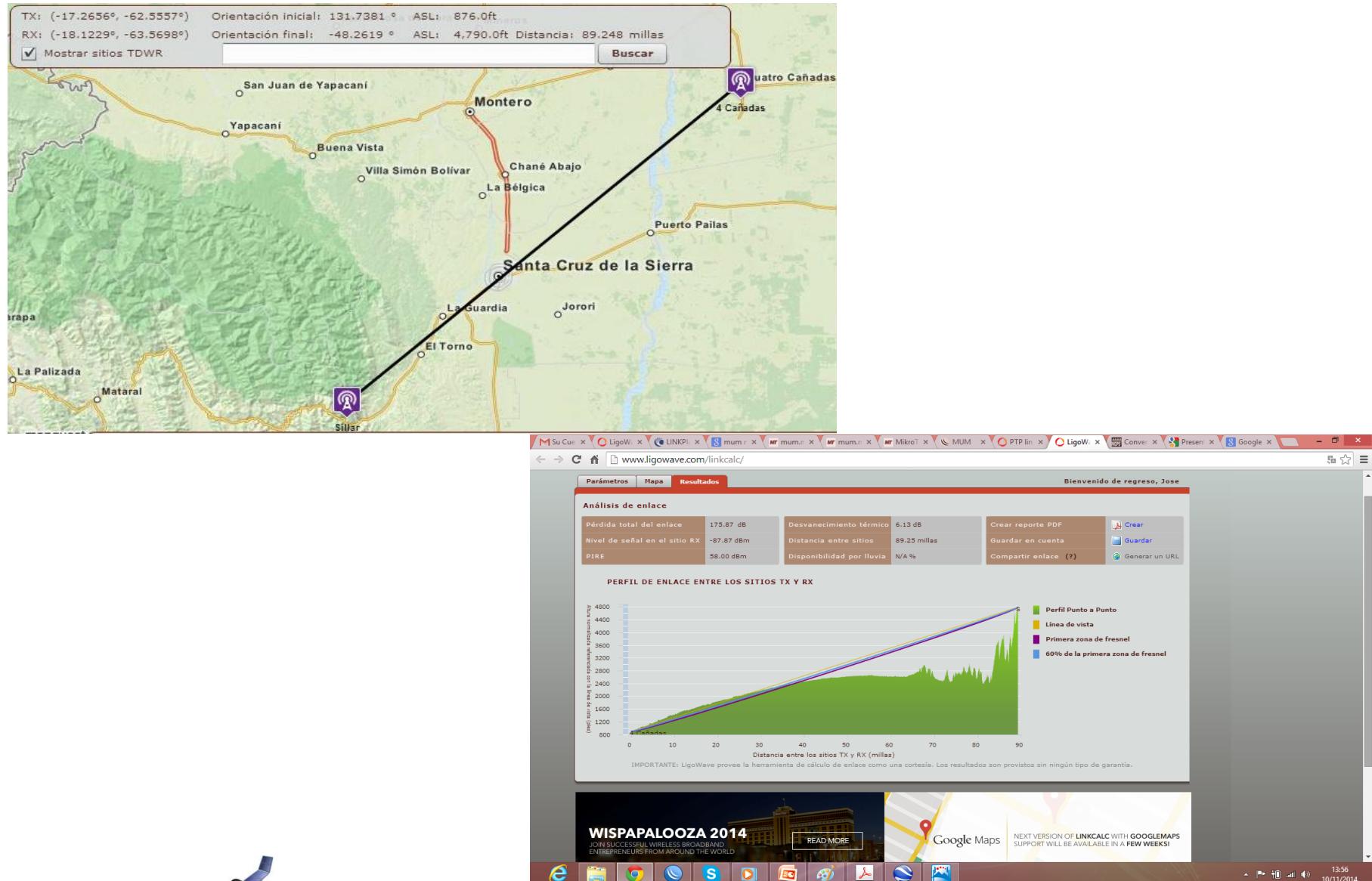
# Caso de Éxito.: Parte 1

Como hacer 144Km de Radio Enlace  
con Routerboard, antena mANT 30 PA  
y antena parabólica offset 0,9mts



# Sitios





# Configuraciones mínimas del Routerboard

- ❖ 4C.: Modo Station WDS
- ❖ Sillar.: Modo Bridge
- ❖ Band.: 5Ghz-A/N
- ❖ Channel Width.: 20Mhz
- ❖ Frecuencia.: 5420 Mhz
- ❖ Nstreme
- ❖ Tx Power default(17dbm)
- ❖ Bridge en ambos extremos
- ❖

# Procedimiento = Prueba 1

- Combinación Inicial 1:



Antena mANT 30 PA Dish,  
RB921UAGS-5SHPacD

Antena Parabólica Offset  
0,9mts , RB SXT G-5HPnD r2

*Distancia= 144 Km Aprox.*

# 1er Resultado

- Radio Enlace no estable ,pero tráfico soportado hasta 2MB, distancia 144Km.

AP Client <4C:5E:0C:57:18:BF>

General 802.1x Signal Nstreme NV2 Statistics

Last Activity: 0.010 s

Tx/Rx Signal Strength: -65/-62 dBm

Tx/Rx Signal Strength Ch0: -69/-69 dBm

Tx/Rx Signal Strength Ch1: -68/-64 dBm

Tx/Rx Signal Strength Ch2:

Signal To Noise: 41 dB

Tx/Rx CCQ: 60/39 %

P Throughput: 66669 kbps

- Signal Strengths -

Rate	Strength	Last Measured
9Mbps	-71	00:09:58.34
12Mbps	-71	00:09:09.60
HT20-7	-67	00:00:00.02
54Mbps	-65	00:00:07.01
48Mbps	-64	00:00:11.78
HT20-6	-64	00:00:00.01
18Mbps	-63	00:01:55.40
HT20-0	-63	00:02:04.14
HT20-2	-63	00:00:05.53
6Mbps	-62	00:00:00
HT20-1	-62	00:00:05.94

OK Remove Reset Copy to Access List Copy to Connect List Ping MAC Ping Telnet MAC Telnet Torch

Interface <wlan1>

Current Tx Power Status Advanced Status Traffic ...

Channel: 5260/20/an

Wireless Protocol: nstreme

Tx Rate: 104Mbps-20MHz/2S

Rx Rate: 130Mbps-20MHz/2S/SGI

SSID: ARNET-4CC

BSSID: 4C:5E:0C:57:18:BF

Radio Name: 4C5E0C5718BF

Tx/Rx Signal Strength: -65/-61 dBm

Tx/Rx Signal Strength Ch0: -69/-68 dBm

Tx/Rx Signal Strength Ch1: -68/-62 dBm

Tx/Rx Signal Strength Ch2:

Noise Floor: -103 dBm

Signal To Noise: 42 dB

Tx/Rx CCQ: 60/39 %

Overall Tx CCQ: 60 %

Distance:

RouterOS Version: 6.21.1

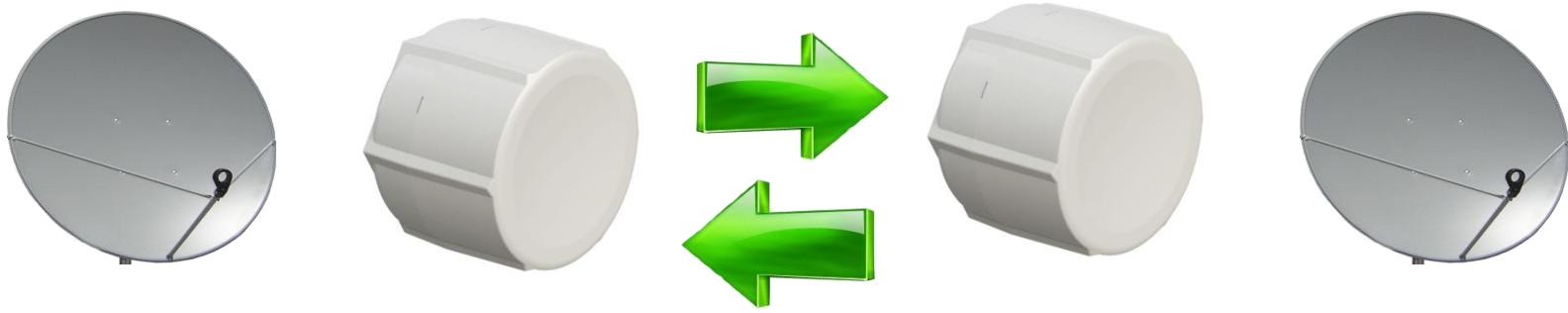
OK Cancel Apply Disable Comment Torch Scan... Freq. Usage... Align... Sniff... Snooper... Reset Configuration Simple Mode

# 1er Resultado

The screenshot displays several windows from the Winbox interface of a MikroTik RouterBoard:

- Identity**: Shows the device identity as "Silar SCZ a 4Cañadas". Buttons: OK, Cancel, Apply.
- Resources**: Displays system statistics:
  - Uptime: 1d 09:06:11
  - Free Memory: 107.9 MiB
  - Total Memory: 128.0 MiB
  - CPU: MIPS 74Kc V5.0
  - CPU Count: 1
  - CPU Frequency: 720 MHz
  - CPU Load: 5 %
  - Free HDD Space: 112.0 MiB
  - Total HDD Size: 128.0 MiB
  - Sector Writes Since Reboot: 403
  - Total Sector Writes: 6 632
  - Bad Blocks: 0.0 %
  - Architecture Name: mipsbe
  - Board Name: RB921UAGS-5SHPacD
  - Version: 6.21.1
- face <wlan1>**: Wireless interface configuration:
  - Mode: station wds
  - Band: 5GHz-A/N
  - Channel Width: 20/40MHz eC
  - Frequency: 5660 MHz
  - SSID: ARNET-4CC
  - Radio Name: 4C5E0C862BDA
  - Scan List: default
  - Wireless Protocol: any
  - Security Profile: default
  - Frequency Mode: manual-txpower
  - Country: czech republic
  - Antenna Gain: 0 dBi
- AP Client <4C:5E:0C:57:18:BF>**: AP client statistics:
  - Last Activity: 0.040 s
  - Tx/Rx Signal Strength: -70/-68 dBm
  - Tx/Rx Signal Strength Ch0: -75/-73 dBm
  - Tx/Rx Signal Strength Ch1: -71/-68 dBm
  - Tx/Rx Signal Strength Ch2:
  - Signal To Noise: 36 dB
  - Tx/Rx CCQ: 53/42 %
  - P Throughput: 40242 kbps
- System Health**: Fan settings:
  - Fan Mode: manual
  - Use Fan: auxiliary
  - Active Fan: auxiliary
  - Voltage: 12.3 V
  - Temperature: 19 C
- Routerboard**: Routerboard information:
  - Routerboard checked
  - Model: 921UAGS-5SHPacD
  - Serial Number: 4E9B04DF6099
  - Current Firmware: 3.17
  - Upgrade Firmware: 3.17
  - Buttons: OK, Upgrade, Settings, USB Power Reset
- Quick Set** sidebar menu:
  - CAPsMAN
  - Interfaces
  - Wireless
  - Bridge
  - PPP
  - Switch
  - Mesh
  - IP
  - MPLS
  - Routing
  - System
  - Queues
  - Files
  - Log
  - Radius
  - Tools
  - New Terminal
  - MetaROUTER
  - Partition
  - Make Supout.rrf
  - Manual
  - Exit

# Procedimiento = Prueba 2



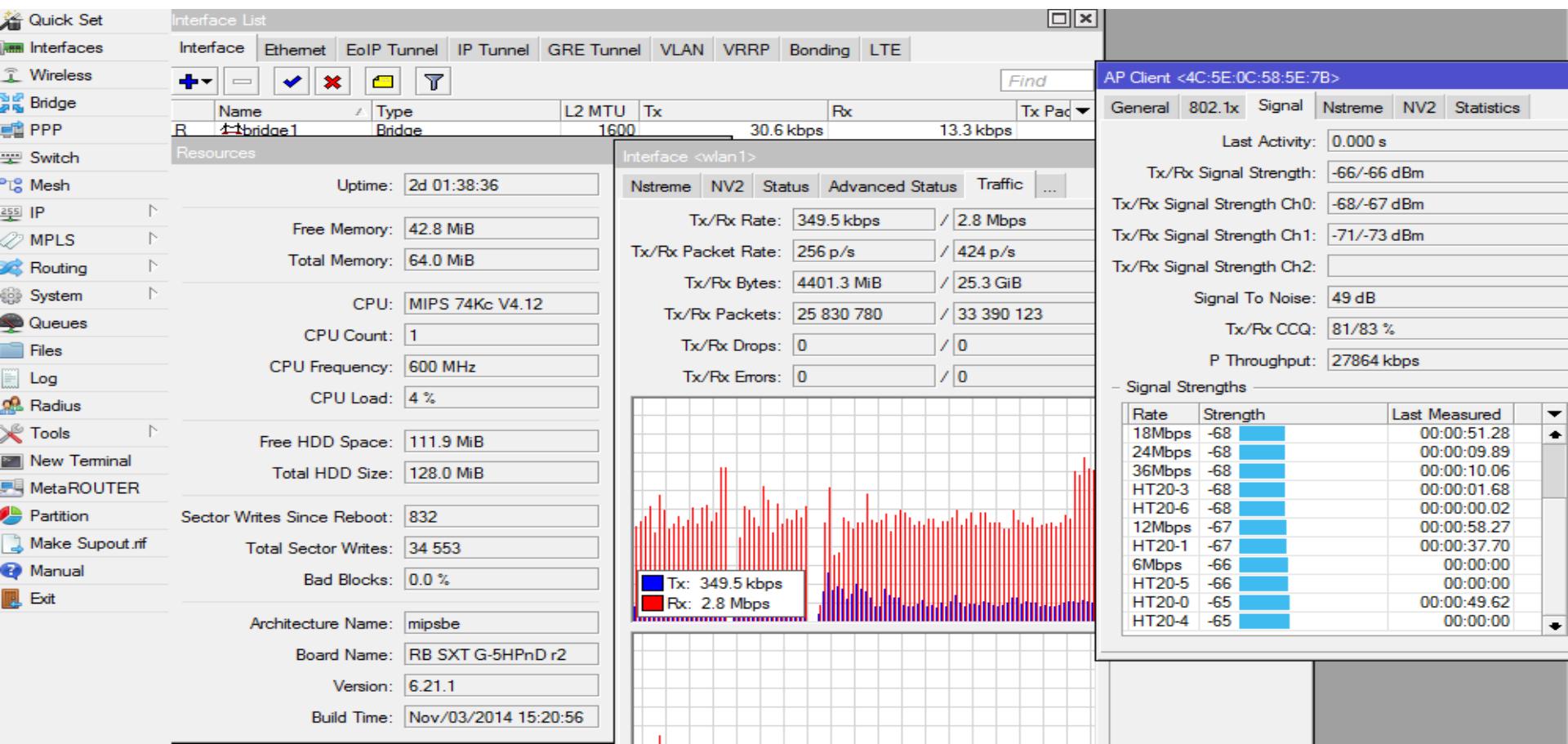
Antena Parabólica Offset  
0,9mts , RB SXT G-5HPnD r2

Antena Parabólica Offset  
0,9mts , RB SXT G-5HPnD r2

*Distancia= 144 Km Aprox.*

# Resultados

- Radio Enlace más estable , tráfico soportado hasta 6MB.
- CCQ aceptable por ahora.
- Menos perdida de Paquetes. Distancia 144km.



# Como Estación

The screenshot displays a network management interface with several windows open:

- Wireless Tables**: Shows a list of wireless interfaces. One entry is highlighted: "WRITEL1" (MAC: 4C:5E:0C:57:18:BF) on interface "wlan1".
- Address List**: A smaller window showing a single entry: "10.15.20.215/..." on interface "bridge1".
- Ping (Running)**: A window showing ping parameters:
  - Ping To: 10.15.20.213
  - Interface: (dropdown menu)
  - ARP Ping: (checkbox)
  - Packet Count: (dropdown menu)
  - Timeout: 1000 ms
- Ping Results**: A table showing the results of the ping:

Seq #	Host	Time	Reply Size	TTL	Status
0	10.15.20.213	21ms	50	64	
1	10.15.20.213	1ms	50	64	
2	10.15.20.213	2ms	50	64	
3	10.15.20.213	3ms	50	64	
4	10.15.20.213	5ms	50	64	
5	10.15.20.213	3ms	50	64	

# Como AP

Wireless Tables

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx/Rx Rate
WRITEL1	4C:5E:0C:57:18:BF	wlan1	00:01:50	no	yes	0.000	-67/-70	57.7Mbps/86.6Mbps

AP Client <4C:5E:0C:57:18:BF>

General	802.1x	Signal	Nstreme	NV2	Statistics	OK																																				
Last Activity: 0.000 s	Tx/Rx Signal Strength: -67/-70 dBm	Tx/Rx Signal Strength Ch0: -69/-73 dBm	Tx/Rx Signal Strength Ch1: -73/-73 dBm	Tx/Rx Signal Strength Ch2:	Signal To Noise: 43 dB	Remove																																				
CPU: MIPS 74Kc V4.12	CPU Count: 1	CPU Frequency: 600 MHz	CPU Load: 11 %	Tx/Rx CCQ: 51/89 %	P Throughput: 25695 kbps	Reset																																				
Free Memory: 46.5 MiB	PCI	USB	CPU	IRQ	Signal Strengths	Copy to Access L																																				
Total Memory: 64.0 MiB					<table border="1"><thead><tr><th>Rate</th><th>Strength</th><th>Last Measured</th></tr></thead><tbody><tr><td>54Mbps</td><td>-73</td><td></td></tr><tr><td>9Mbps</td><td>-72</td><td></td></tr><tr><td>HT20-0</td><td>-72</td><td></td></tr><tr><td>HT20-1</td><td>-72</td><td></td></tr><tr><td>HT20-6</td><td>-72</td><td></td></tr><tr><td>HT20-7</td><td>-72</td><td></td></tr><tr><td>12Mbps</td><td>-71</td><td></td></tr><tr><td>18Mbps</td><td>-71</td><td></td></tr><tr><td>48Mbps</td><td>-71</td><td></td></tr><tr><td>6Mbps</td><td>-70</td><td></td></tr><tr><td>HT20-3</td><td>-70</td><td></td></tr></tbody></table>	Rate	Strength	Last Measured	54Mbps	-73		9Mbps	-72		HT20-0	-72		HT20-1	-72		HT20-6	-72		HT20-7	-72		12Mbps	-71		18Mbps	-71		48Mbps	-71		6Mbps	-70		HT20-3	-70		Ping
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HT20-3	-70																																									
Uptime: 2d 02:23:06	OK					MAC Ping																																				
Free HDD Space: 111.9 MiB						Telnet																																				
Total HDD Size: 128.0 MiB						MAC Telnet																																				
Sector Writes Since Reboot: 868						Torch																																				
Total Sector Writes: 93 777																																										
Bad Blocks: 0.0 %																																										
Architecture Name: mipsbe																																										
Board Name: RB SXT G-5HPnD r2																																										
Version: 6.21.1																																										

Routerboard

Routerboard	OK
<input checked="" type="checkbox"/> Routerboard	OK
Model: SXT G-5HPnD...	Upgrade
Serial Number: 4646040E6C..	Setting
Current Firmware: 3.19	USB Power
Upgrade Firmware: 3.19	
00:00:01.84	

# Lo que se viene.: Parte 2



Antena mANT30 Dish ,Radome,  
RB921UAGS-5SHPacD



*CONTINUARA....*



# GRACIAS

