

What's new in wireless since RouterOS v6.37

by Lorenzo Busatti

mum

EUROPE ON MARCH 30 - 31, 2017

Welcome to Italy!



About me

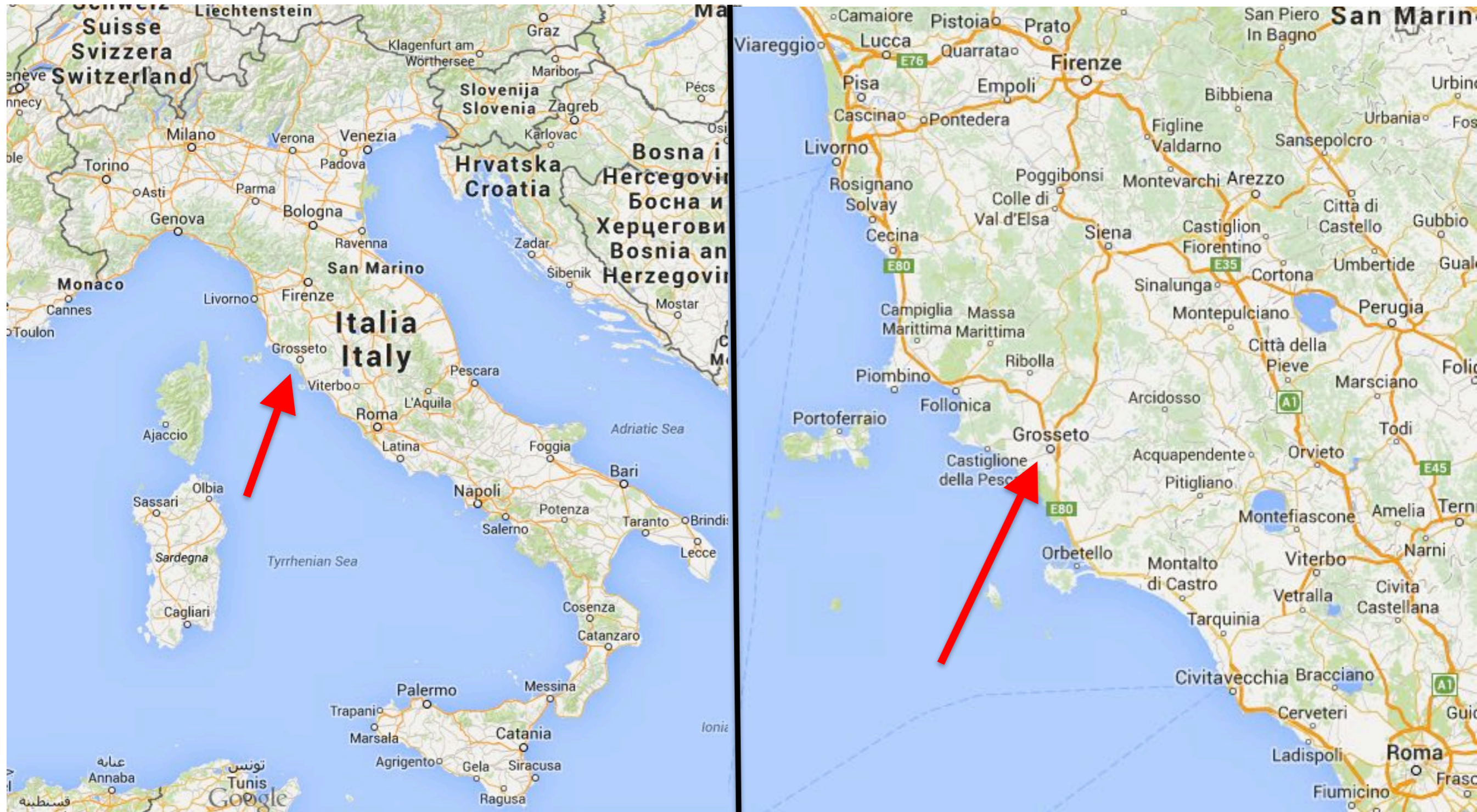
Lorenzo Busatti

- Founder of Grifonline S.r.l. [ISP] 1997
- A user of MikroTik since 2006
- Founder of Linkwave [WISP] 2006
- MikroTik Trainer 2010
- Member of RIPE, AMS-IX, MIX-IT





About me





I'm a MikroTik *enthusiast*

I'm a MikroTik *enthusiast*

I'm a MikroTik *evangelist*

About me

- Founder (2016) of the



Non Profit Organization for
High Quality Training Partners

Dedicated to Max

About the mAP lite

One of the
smartest
MikroTik
wireless
router



mAP & mAP lite: The Wireless Swiss Knife Always in Your Pocket

4,714 views

30 0

The mAP lite



Wireless Devices

All the MikroTik wireless devices are using **the same wireless package**: from the mAP lite up to the Netmetals.

Wireless Devices



The new wireless package

The new Wireless (wireless-rep since 6.35) package, with the features:

- The DFS “settings”
- Background scan
- Wireless Scan features
- Station Roaming
- Repeater function
- New Virtual Wireless Interfaces
- Future features?

The DFS settings

- **The DFS option is removed**
- **Why the DFS should be implemented?**
- **How the DFS really work?**

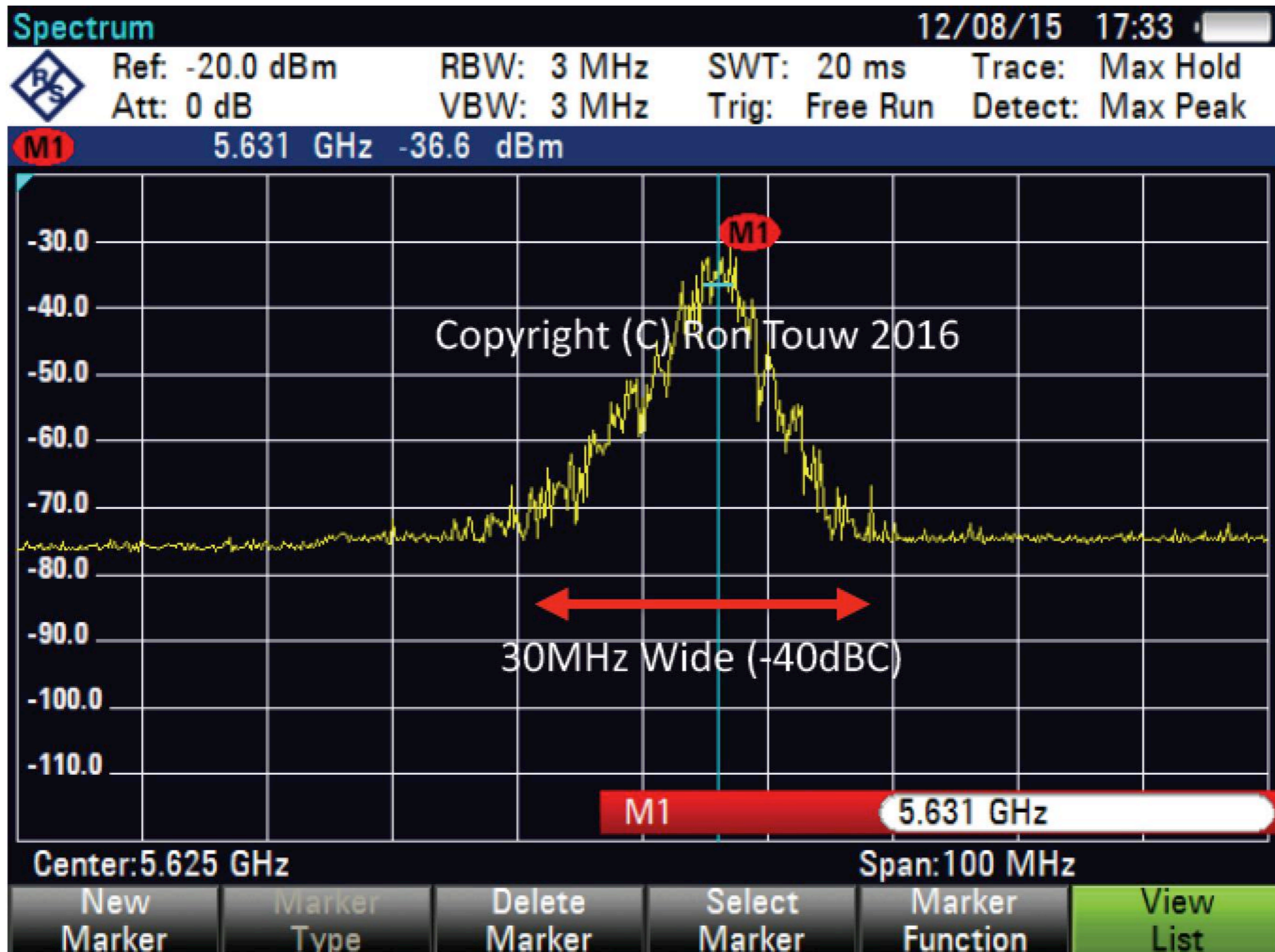
The DFS settings

Radars Detection and DFS on MikroTik

MikroTik User Meeting
London 2016

By Ron Touw
LinITX

The DFS settings



Background scan

Is now possible to do a wireless scan in “Background”:

- Without losing the connection
- It is slow but “safe”
- Will work in 802.11 only (as AP if enabled, as station if connected)

Background scan

The screenshot shows the Mikrotik WinBox interface. The 'Scanner (Running)' dialog box is open, showing the interface 'wlan1' and the 'Background Scan' checkbox checked. Below the dialog, a table displays the results of the scan.

	Address	SSID	Channel	Signal...	Nois...	Sign...	Radio Name
A	00:00:00:00:00:60	NH-Hotel-Group	2412/20/g	-84	0	0	
	00:03:52:E9:24:60	NH-Hotel-Group	2412/20/g	-87	0	0	
AP	14:CF:92:B0:50:33	TP-LINK_M5_B...	2417/20/gn	-50	0	0	
A	00:03:52:F1:51:30	NH-Hotel-Group	2437/20/g	-79	0	0	
A	00:03:52:F2:55:E0	NH-Hotel-Group	2462/20/g	-79	0	0	
	00:03:52:EF:CC:70	NH-Hotel-Group	2462/20/g	-89	0	0	

```
/interface wireless scan wlan1 background=yes
```

Wireless Scan features

- The **Scan-to-file**: a dream that become true!
- The usage of the **scan (rounds and save-file)**
- **Limits** of the scan in the **virtual interfaces**

Wireless Scan features

```
/interface wireless scan wlan1 rounds=5 save-file=FileName
```

```
[admin@mAP lite] > /interface wireless scan wlan1 rounds=10 save-file=NH-network
```

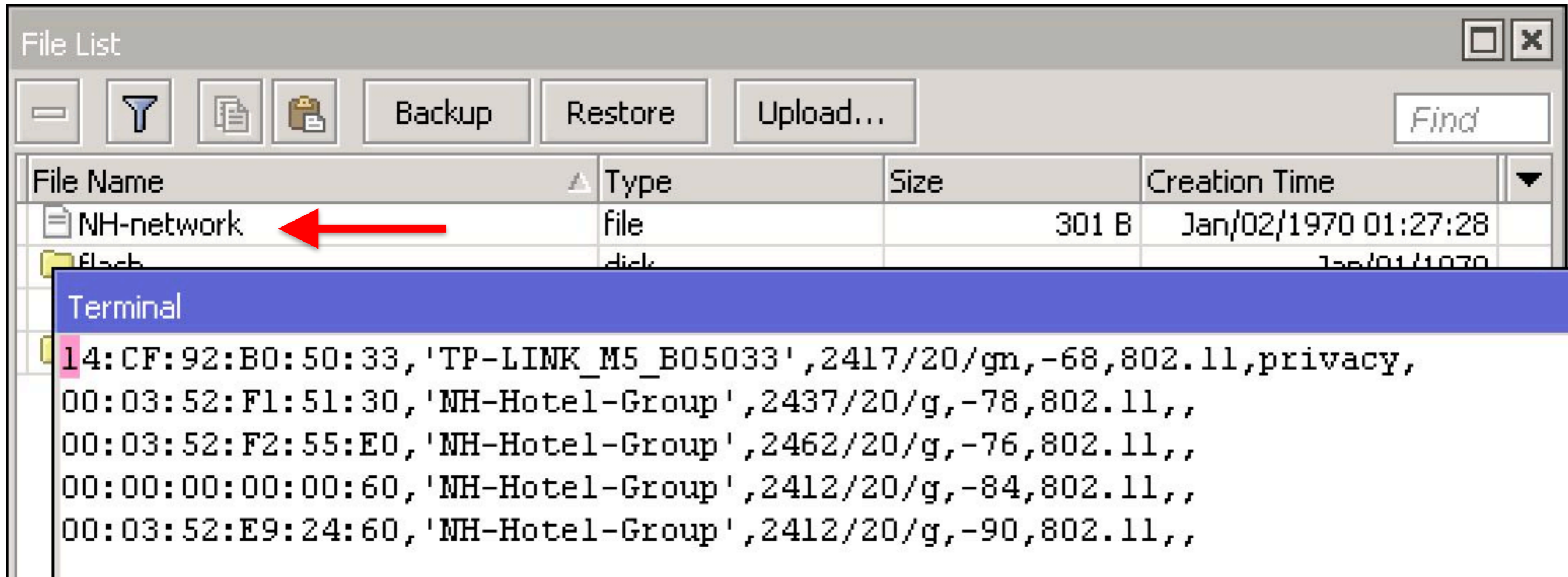
```
Flags: A - active, P - privacy, R - routers-network, N - nstreme, T - tdma,
```

```
W - wds, B - bridge
```

	ADDRESS	SSID	CHANNEL	SIG	NF	SNR	RADIO-NAME	ROUTERO...
AP	14:CF:92:B0:50:33	TP-LINK_...	2417/20/gn	-55	-107	52		
A	00:03:52:F1:51:30	NH-Hotel...	2437/20/g	-82	-102	20		
A	00:03:52:F2:55:E0	NH-Hotel...	2462/20/g	-79	-106	27		
	00:00:00:00:00:60	NH-Hotel...	2412/20/g	-84	-109	25		
A	00:03:52:E9:24:60	NH-Hotel...	2412/20/g	-90	-109	19		

```
-- [Q quit|D dump|C-z pause]
```

Wireless Scan features



File List

Backup Restore Upload... Find

File Name	Type	Size	Creation Time
NH-network	file	301 B	Jan/02/1970 01:27:28
Flash	disk		Jan/01/1970

Terminal

```
14:CF:92:B0:50:33,'TP-LINK_M5_B05033',2417/20/gn,-68,802.11,privacy,  
00:03:52:F1:51:30,'NH-Hotel-Group',2437/20/g,-78,802.11,,  
00:03:52:F2:55:E0,'NH-Hotel-Group',2462/20/g,-76,802.11,,  
00:00:00:00:00:60,'NH-Hotel-Group',2412/20/g,-84,802.11,,  
00:03:52:E9:24:60,'NH-Hotel-Group',2412/20/g,-90,802.11,,
```

Can be done in “background” also.

Wireless Scan features

- Scan command is supported also on the Virtual wireless interfaces, if the master interface is running.
- It is always in "background"

Station Roaming

- Introduced in the version 6.38.3
- Available only for the 802.11
- Only for the station mode

Station Roaming

Interface <wlan1>

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

Mode: station

Band: 2GHz-B/G/N

Channel Width: 20MHz

Frequency: 2412 MHz

SSID: NH-Hotel-Group

Radio Name: 6C3B6BF57BA9

Scan List: default

Wireless Protocol: 802.11

Security Profile: default

Frequency Mode: manual-txpower

Country: italy

Antenna Gain: 0 dBi

WMM Support: disabled

Station Roaming: enabled

OK

Cancel

Apply

Disable

Comment

Simple Mode

Torch

WPS Accept

WPS Client

Setup Repeater

Scan...

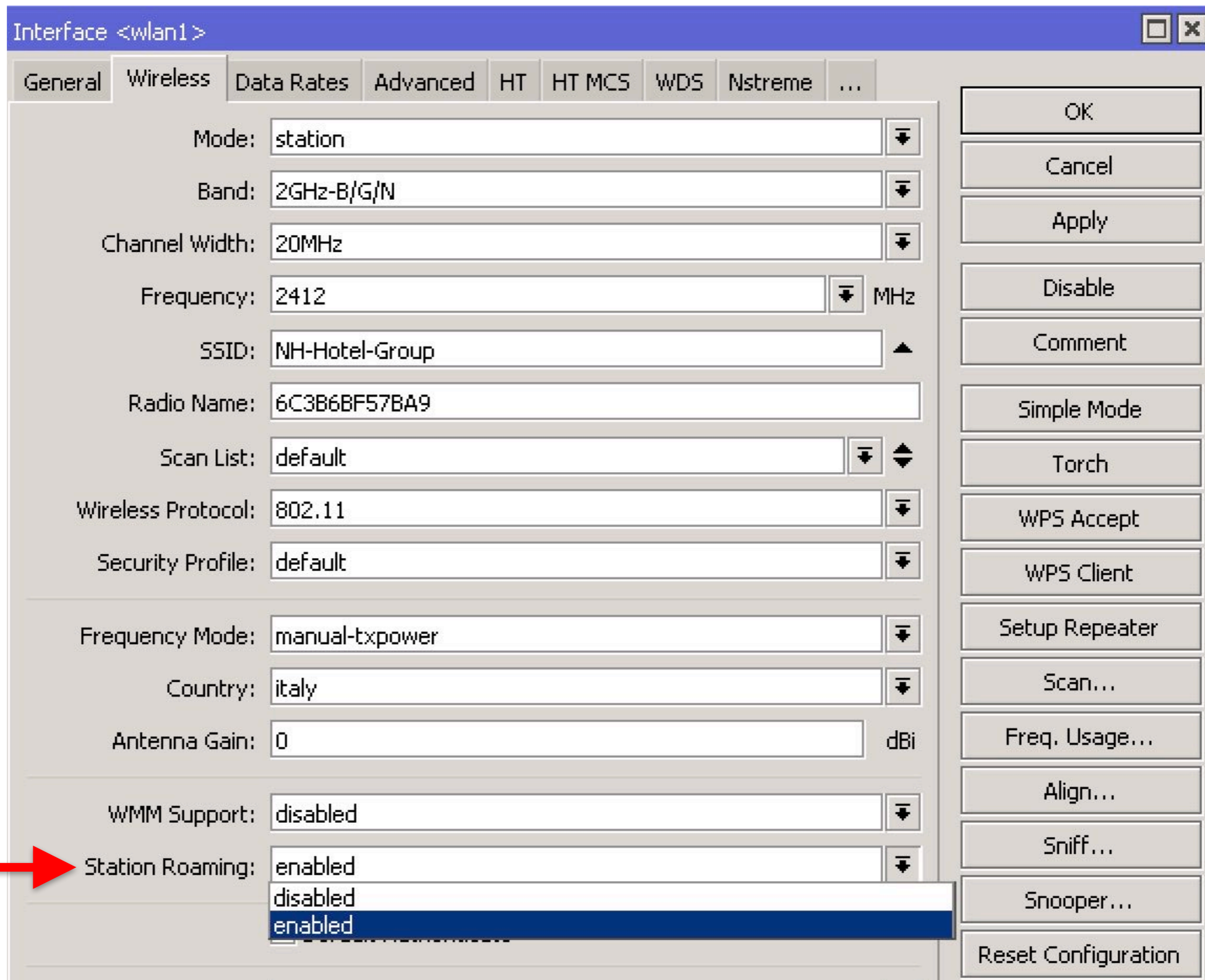
Freq. Usage...

Align...

Sniff...

Snooper...

Reset Configuration



Station Roaming

- Will periodically perform background scan
- When find an AP with better signal it will try to roam to that AP
- These intervals will become shorter when the wireless signal become worse

Repeater function

- The new “Repeater” function – 1click operation.
- (Was) the “name” of this wireless package (wireless-**rep**)
- The difference between the station-bridge and the station-pseudobridge.

Repeater function

Wireless Tables

Interfaces | Nstreme Dual | Access List | Registration | Connect List | Security Profiles | Channels

+ | - | ✓ | ✗ | 📄 | 🔍 | CAP | WPS Client | Setup Repeater | Scanner | Freq. Usage

	Name	Type	Actual MTU	Tx	Rx	Tx
R	wlan1	Wireless (Atheros AR...	1500		0 bps	0 bps

Setup Repeater

Interface: wlan1

Address:

SSID: The SSID you want to repeat

Passphrase: The PSK of the encryption used in the AP

Start

Stop

Close

Repeater function

- Wireless repeater will receive the signal from the AP and repeat it
- Using the **same** physical interface
- For extending the wireless service for the wireless clients
- Will configure the wireless interface to connect to the AP (in station-bridge or station-pseudobridge)
- Will create a virtual AP interface, a bridge and add both interfaces (main and the virtual) to this bridge

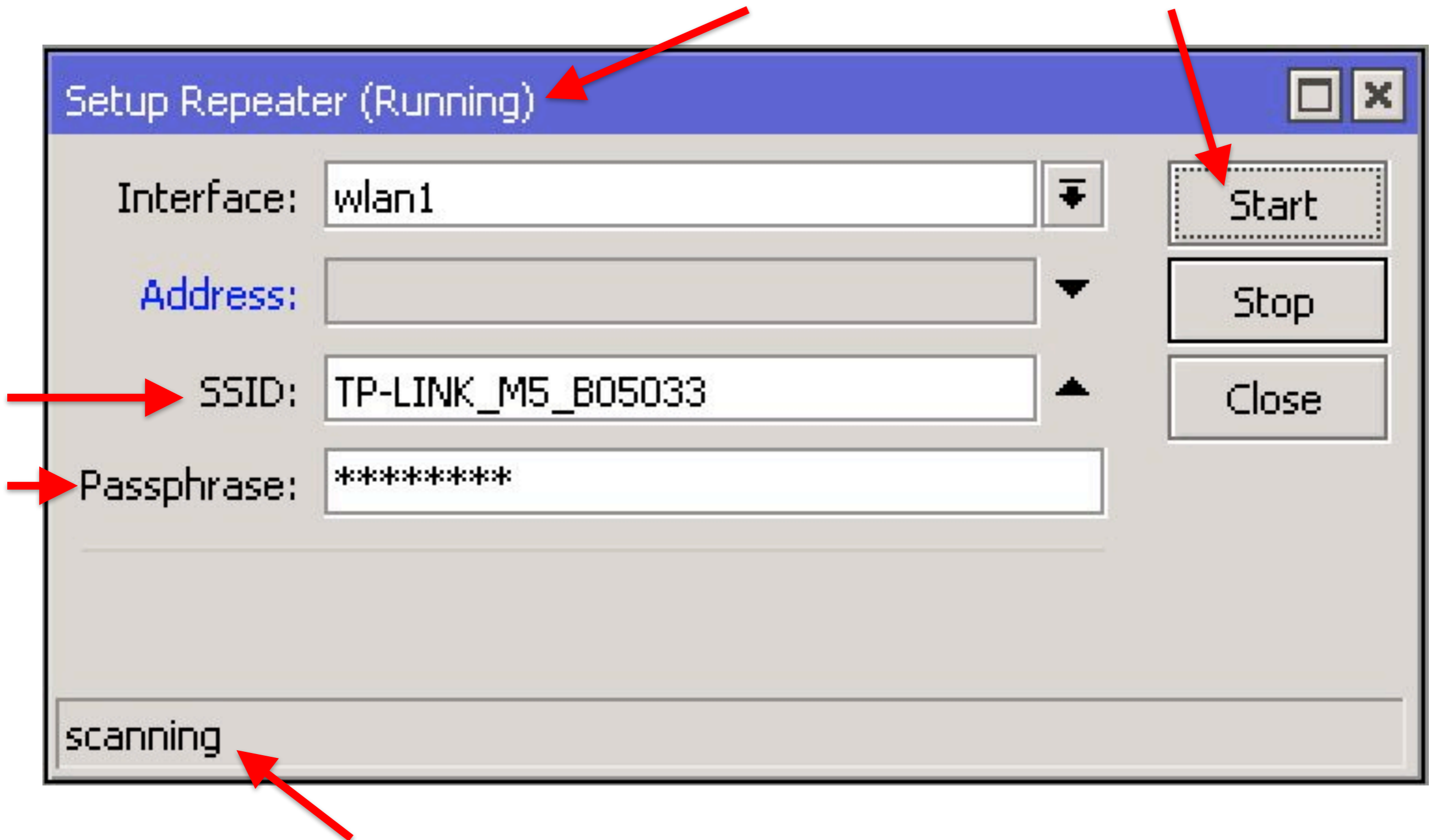
Repeater function

If the AP is WPS enabled, you don't need to specify the wireless password 😊

```
/interface wireless setup-repeater wlan1
```

If the password is NOT specified, will do WPS to find out passphrase.

Repeater function



Repeater function

Setup Repeater

Interface: wlan1

Address:

SSID: TP-LINK_M5_B05033

Passphrase: *****

Start

Stop

Close

done

Repeater function

	Name	Type	Ac
RS	wlan1	Wireless (Atheros AR...)	
RS	wlan2	Virtual	

Virtual AP: created.

Repeater function

Wireless Tables

Interfaces | Nstreme Dual | Access List | Registration | Connect List | Security Profiles | Channels

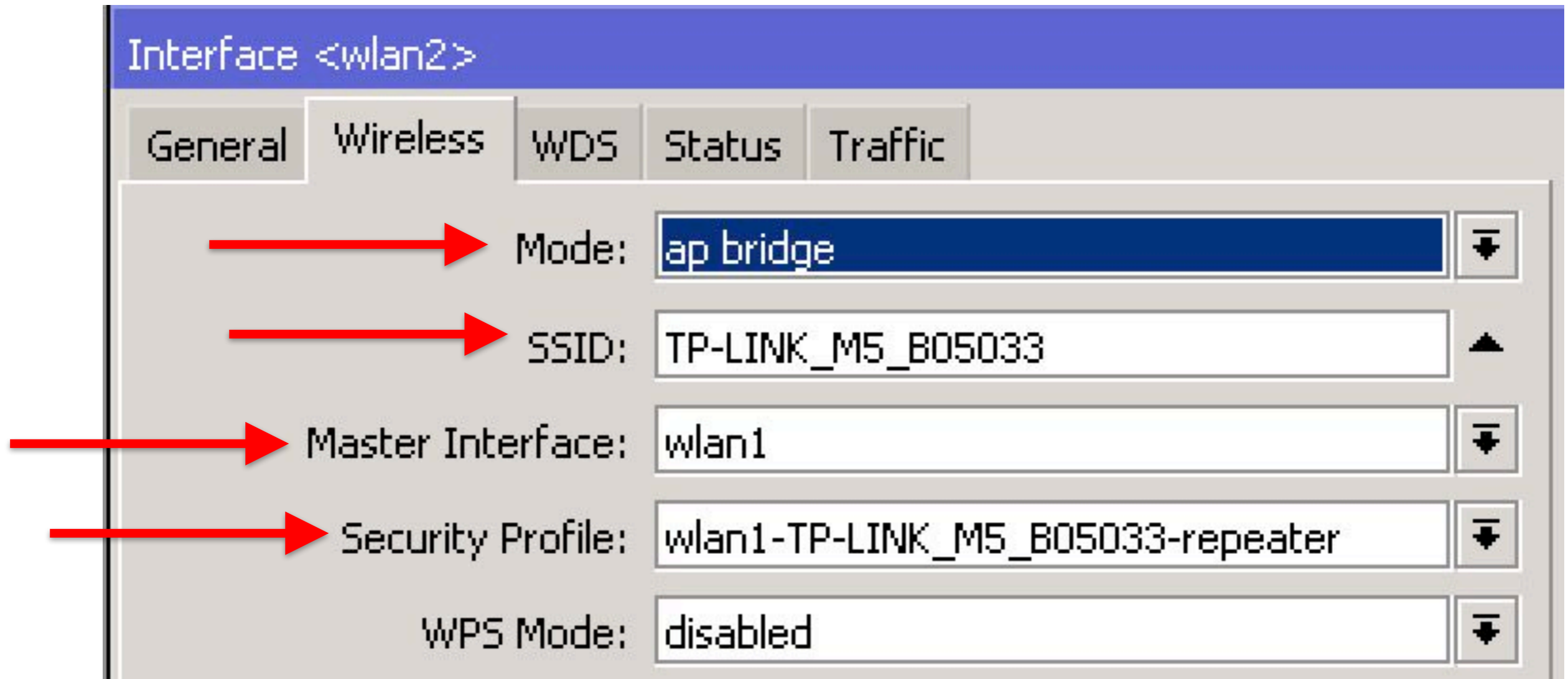
+ - [icon] [icon]

Name	Mode	Authenticatio...	Unicast Ciphers	Group Ciphers	WPA Pre-Shared ...	WPA2 Pre-Share...
default	none				*****	*****
wlan1-TP-LINK_M5_B05033-repeater	dynamic keys	WPA PSK WP...	aes ccm tkip	aes ccm tkip	*****	*****



Security Profile: created.

Repeater function



Virtual AP: set-up

Repeater function

Bridge configuration interface showing the Bridge tab selected. The table below lists the configured interfaces and their associated bridge:

Interface	Bridge	P
twlan1	bridge1	
twlan2	bridge1	

Bridge: created

Repeater function

Interface <wlan1>

General Wireless Data Rates Advanced HT HT MCS WDS Nstreme NV2 ...

Mode: station pseudobridge

Band: 2GHz-B/G/N

Channel Width: 20MHz

Frequency: 2417 MHz

SSID: TP-LINK_M5_B05033

Radio Name: 6C3B6BF57BA9

Scan List: default

Wireless Protocol: any

Security Profile: wlan1-TP-LINK_M5_B05033-repeater

Station: set-up

Repeater function

Station-pseudobridge:

Doing a “masquerade” for the L2 network behind the station, have limitations, but can be done “against” any brand without special settings, like WDS.

Repeater function

Station-bridge:

A MikroTik proprietary protocol, can be done only for connecting to a MikroTik AP.

Will not do any «masquerade», if possibile use this mode 😊

New Virtual Wireless Interfaces

This is the part I like of this presentation:
**the multiple configurations of the new
Virtual Wireless Interfaces** 😊

- **All the modes supported by the virtual:
as stations and as Aps**
- **With mixed configurations**

New Virtual Wireless Interfaces

- In the past RouterOS supported only Virtual AP interfaces, that should have the physical interface setup as AP BRIDGE.
- With the new wireless package you're now able to setup Virtual Wireless in "total" freedom
- Yes, they obviously will share the same frequency and protocol (NO NV2 there!!)

New Virtual Wireless Interfaces

- I Don't want to bother you with “boring” things
- If you watched my mAP presentation you now what I will show you now 😊

New Virtual Wireless Interfaces

Wireless Tables

Interfaces | Nstreme Dual | Access List | Registration | Connect List | Security Profiles | Channels

+ - ✓ ✗ [Icon] [Icon] CAP WPS Client Setup Repeater Scanner Freq. Usage Alignment

	Name	Type	MAC Address	Mode	Band	Chan...	Freque...	SSID
R	wlan1	Wireless (Atheros...)	6C:3B:6B:F5:7B:A9	station	2GHz-B/G	20MHz	2462	NH-Hotel-Group
R	wlan2	Virtual	6E:3B:6B:F5:7B:A9	station				NH-Hotel-Group
R	wlan3	Virtual	6E:3B:6B:F5:7B:AA	station				NH-Hotel-Group
R	wlan4	Virtual	6E:3B:6B:F5:7B:AB	station				NH-Hotel-Group
R	wlan5	Virtual	6E:3B:6B:F5:7B:AC	station				NH-Hotel-Group
R	wlan6	Virtual	6E:3B:6B:F5:7B:AD	station				NH-Hotel-Group
R	wlan7	Virtual	6E:3B:6B:F5:7B:AE	station				NH-Hotel-Group
R	wlan8	Virtual	6E:3B:6B:F5:7B:AF	station				NH-Hotel-Group
R	wlan9	Virtual	6E:3B:6B:F5:7B:B0	station				NH-Hotel-Group
R	wlan10	Virtual	6E:3B:6B:F5:7B:B1	station				NH-Hotel-Group

New Virtual Wireless Interfaces

Wireless Tables

Interfaces | Nstreme Dual | Access List | Registration | Connect List | Security Profiles | Channels

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R	wlan1	Wireless (Atheros...)	6C:3B:6B:F5:7B:A9	station	2GHz-B/G	20MHz	2462	NH-Hotel-Group
R	wlan2	Virtual	6E:3B:6B:F5:7B:A9	station				NH-Hotel-Group
R	wlan3	Virtual	6E:3B:6B:F5:7B:AA	station				NH-Hotel-Group
R	wlan4	Virtual	6E:3B:6B:F5:7B:AB	station				NH-Hotel-Group
R	wlan5	Virtual	6E:3B:6B:F5:7B:AC	station				NH-Hotel-Group
R	wlan6	Virtual	6E:3B:6B:F5:7B:AD	station				NH-Hotel-Group
R	wlan7	Virtual	6E:3B:6B:F5:7B:AE	station				NH-Hotel-Group
R	wlan8	Virtual	6E:3B:6B:F5:7B:AF	station				NH-Hotel-Group
R	wlan9	Virtual	6E:3B:6B:F5:7B:B0	station				NH-Hotel-Group
R	wlan10	Virtual	6E:3B:6B:F5:7B:B1	station				NH-Hotel-Group

- Yes, 10 different station connected at the same SSID

New Virtual Wireless Interfaces

Wireless Tables

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R	wlan1	Wireless (Atheros...)	6C:3B:6B:F5:7B:A9	station	2GHz-B/G	20MHz	2462	NH-Hotel-Group
R	wlan2	Virtual	6E:3B:6B:F5:7B:A9	station				NH-Hotel-Group
R	wlan3	Virtual	6E:3B:6B:F5:7B:AA	station				NH-Hotel-Group
R	wlan4	Virtual	6E:3B:6B:F5:7B:AB	station				NH-Hotel-Group
R	wlan5	Virtual	6E:3B:6B:F5:7B:AC	station				NH-Hotel-Group
R	wlan6	Virtual	6E:3B:6B:F5:7B:AD	station				NH-Hotel-Group
R	wlan7	Virtual	6E:3B:6B:F5:7B:AE	station				NH-Hotel-Group
R	wlan8	Virtual	6E:3B:6B:F5:7B:AF	station				NH-Hotel-Group
R	wlan9	Virtual	6E:3B:6B:F5:7B:B0	station				NH-Hotel-Group
R	wlan10	Virtual	6E:3B:6B:F5:7B:B1	station				NH-Hotel-Group

- 10 different clients, by the AP point of view

New Virtual Wireless Interfaces

- Yes, 10 different station connected at the same SSID
- 10 different clients, by the AP pint of view
- More chance to get bandwidth in “worst” places with horrible policy 😊

New Virtual Wireless Interfaces

Yes, you should setup DHCP clients, masquerade and maybe few mangle rules to “balance” the traffic for port, destination or using the new Dynamic Address List function!

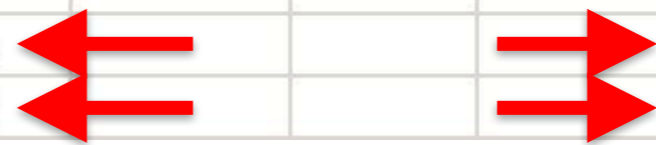
(but these are not the purposes of THIS talk 😊)

New Virtual Wireless Interfaces

- As I told you, you can mix up different Virtual Wireless interfaces
- By default when you create a new Virtual Wireless it will be a “separate” interface, will be not into any bridge.

New Virtual Wireless Interfaces

Name	Type	MAC Address	Mode	Band	Chan...	Frequ...	SSID
wlan1	Wireless (Atheros...)	6C:3B:6B:F5:7B:A9	station	2GHz-B/G	20MHz	2462	NH-Hotel-Group
wlan2	Virtual	6E:3B:6B:F5:7B:A9	station				NH-Hotel-Group
wlan3	Virtual	6E:3B:6B:F5:7B:AA	station				NH-Hotel-Group
wlan4	Virtual	6E:3B:6B:F5:7B:AB	station				NH-Hotel-Group
wlan5	Virtual	6E:3B:6B:F5:7B:AC	station				NH-Hotel-Group
wlan6	Virtual	6E:3B:6B:F5:7B:AD	station				NH-Hotel-Group
wlan7	Virtual	6E:3B:6B:F5:7B:AE	station				NH-Hotel-Group
wlan8	Virtual	6E:3B:6B:F5:7B:AF	station				NH-Hotel-Group
wlan9	Virtual	6E:3B:6B:F5:7B:B0	station				NH-Hotel-Group
wlan10	Virtual	6E:3B:6B:F5:7B:B1	station				NH-Hotel-Group
wlan11	Virtual	6E:3B:6B:F5:7B:B2	ap bridge				MyPersonal10Xwlan
wlan12	Virtual	6E:3B:6B:F5:7B:B3	ap bridge				WIFIpremium



New Virtual Wireless Interfaces

Name	Type	MAC Address	Mode	Band	Chan...	Frequ...	SSID
wlan1	Wireless (Atheros...)	6C:3B:6B:F5:7B:A9	station	2GHz-B/G	20MHz	2462	NH-Hotel-Group
wlan2	Virtual	6E:3B:6B:F5:7B:A9	station				NH-Hotel-Group
wlan3	Virtual	6E:3B:6B:F5:7B:AA	station				NH-Hotel-Group
wlan4	Virtual	6E:3B:6B:F5:7B:AB	station				NH-Hotel-Group
wlan5	Virtual	6E:3B:6B:F5:7B:AC	station				NH-Hotel-Group
wlan6	Virtual	6E:3B:6B:F5:7B:AD	station				NH-Hotel-Group
wlan7	Virtual	6E:3B:6B:F5:7B:AE	station				NH-Hotel-Group
wlan8	Virtual	6E:3B:6B:F5:7B:AF	station				NH-Hotel-Group
wlan9	Virtual	6E:3B:6B:F5:7B:B0	station				NH-Hotel-Group
wlan10	Virtual	6E:3B:6B:F5:7B:B1	station				NH-Hotel-Group
wlan11	Virtual	6E:3B:6B:F5:7B:B2	ap bridge				MyPersonal10Xwlan
wlan12	Virtual	6E:3B:6B:F5:7B:B3	ap bridge				WIFIp premium

Yes!

- One AP for me (encrypted is better)
- One AP to sell with using Hotspot-Usermanager-Paypal 😊



New Virtual Wireless Interfaces

- As I told you, you can mix up different Virtual Wireless interfaces

Future features?

Observing the public changelog:

Other changes since 6.38.3:

*) winbox - added GPS menu;

What's new in 6.37 (2016-Sep-23 08:20):

*) gps - always check NMEA checksum if available;

*) ntp - fixed ntp server when local-clock used (like usb gps module);

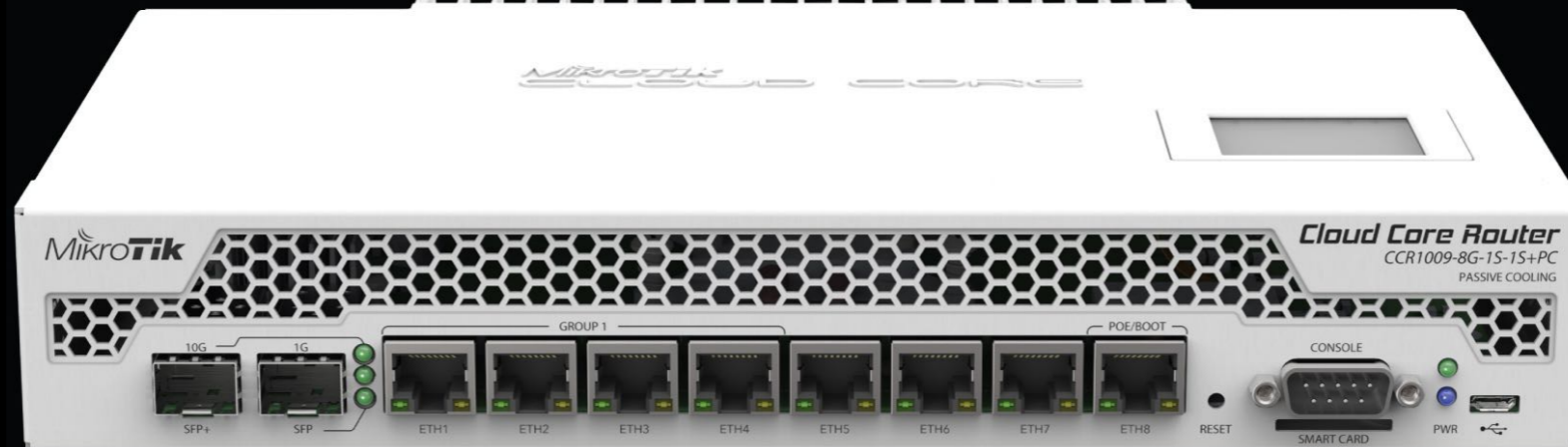
Will MikroTik implement a GPS based TDMA?

Wrap up

- ✓ I hope you enjoyed my presentation and the news in the wireless package since the version 6.37

WIN

Cloud Core Router



Challenge your network knowledge!

Test your skill and win MUG and mAPs



Thank you!

Q & A

<http://training.grifonline.it>
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