

What to Do With Your Present

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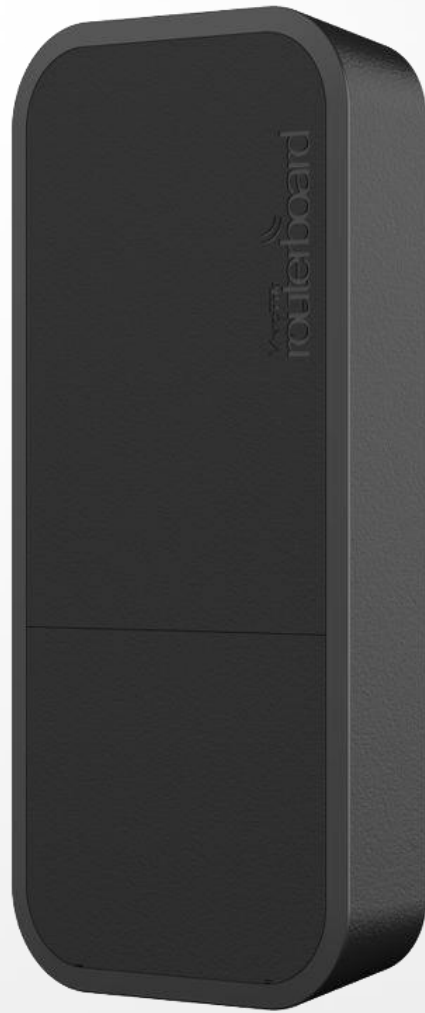
Overview

- Gift from MikroTik – wAP
- Wireless repeater quick guide
- CAPsMAN overview

WAP



Black and White edition



Features

- CPU 650 MHz
- RAM 64 MB
- Flash 16 MB
- Wireless 802.11b/g/n dual-chain
- Gain 2dBi antennas
- Ethernet 10/100Mbps
- Dimensions 185 x 85 x 30 mm

Features cont

- Wide input Voltage (11-57V)
- 802.3af/at, Passive PoE and power jack
- Low Power Consumption (up to 4W)
- High Operating Temp (-40C to +70C)
- Waterproof case design suitable for indoor and outdoor

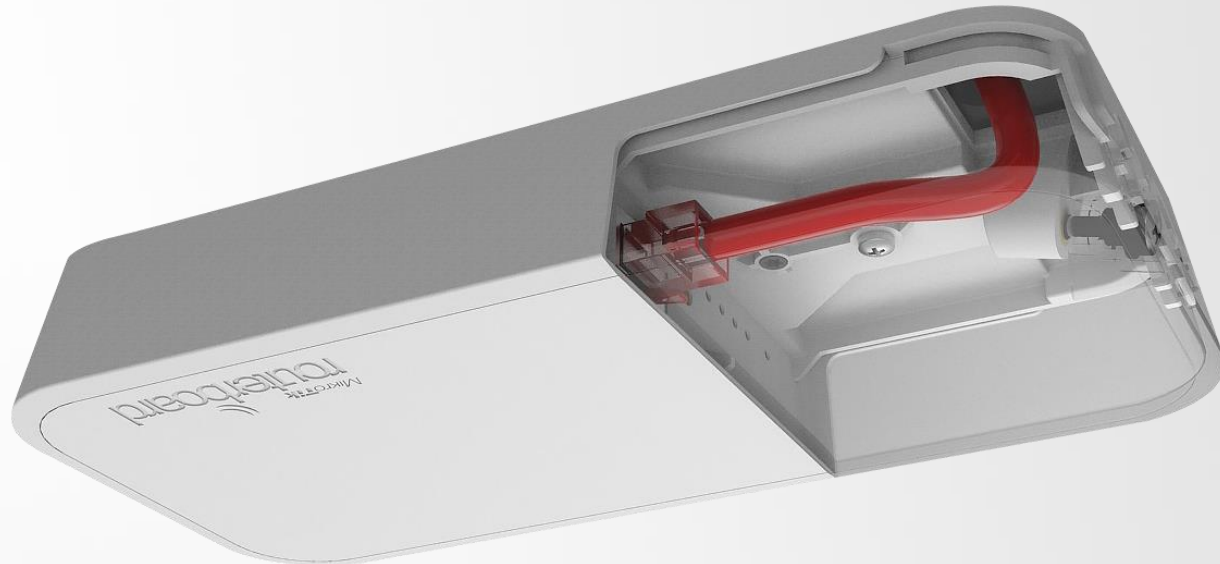
Usage Cases



Use it on the wall!

- Wall mounting is easy thanks to the provided drill template and screw anchor. Everything included

Usage Cases



Use it on the ceiling!

- The WAP comes bundled with all the necessary things to be mounted on ceiling
- Cable breakout provides ability to run cable through the ceiling

New wAP ac

- CPU 720 MHz
- RAM 64 MB
- Flash 16 MB
- Wireless 802.11b/g/n dual-chain
- Wireless 802.11a/n/ac triple-chain
- Gain 2dBi antennas
- Ethernet 10/100/1000Mbps
- Voltage 11-57V with 802.3at POE
- Consumption up to 12W
- Operating Temperatures -30C to +70C
- Dimensions 185 x 85 x 30 mm

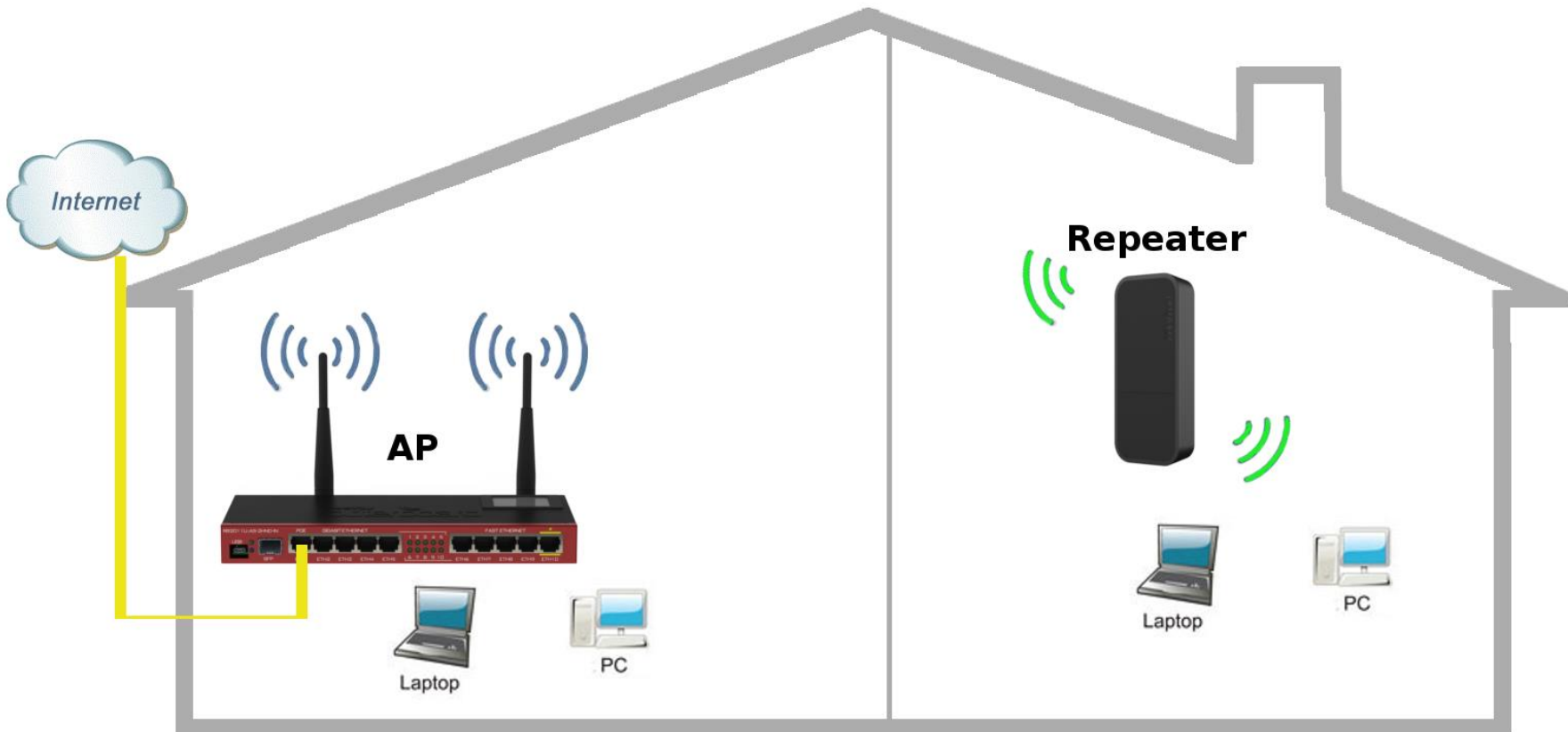
Plug the Cable and Use

- Ether1 configured as WAN port
 - Firewall protection (only ping allowed)
 - Masquerade enabled
 - DHCP client enabled
- Fast-track enabled
- Default local IP: 192.168.88.1/24
- Wireless access point enabled
- SSID: MikroTik-<last 6 chars from MAC>
- DHCP server on wireless AP

Secure the Router

- Connect and set username/password
- Set WPA and WPA2 key to secure AP

Repeater at Home



Repeater at Home

Wireless repeaters extend your wireless network range without requiring you to add any wiring.

Repeater should have two wireless interfaces or new wireless-rep package

How to Connect

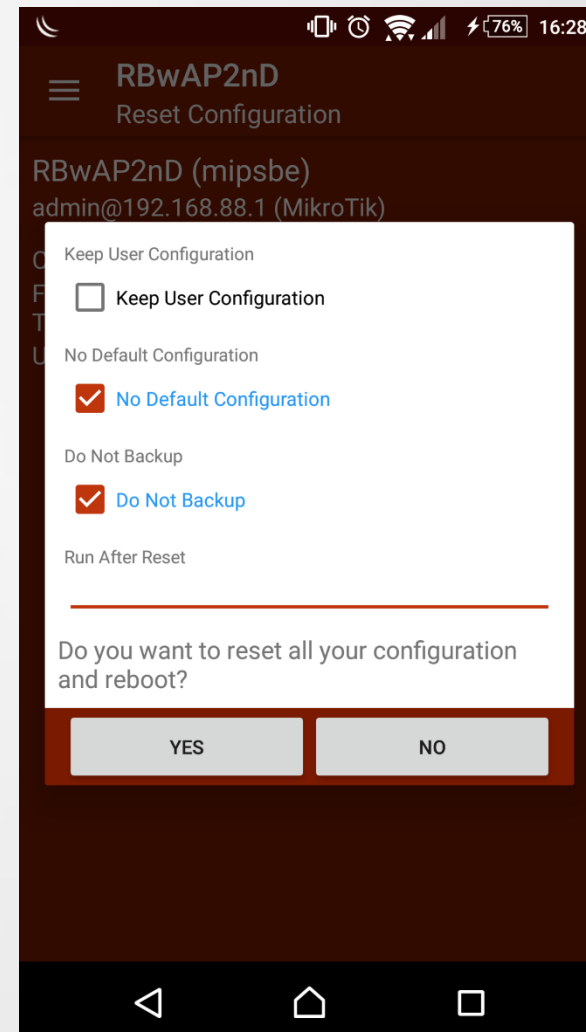
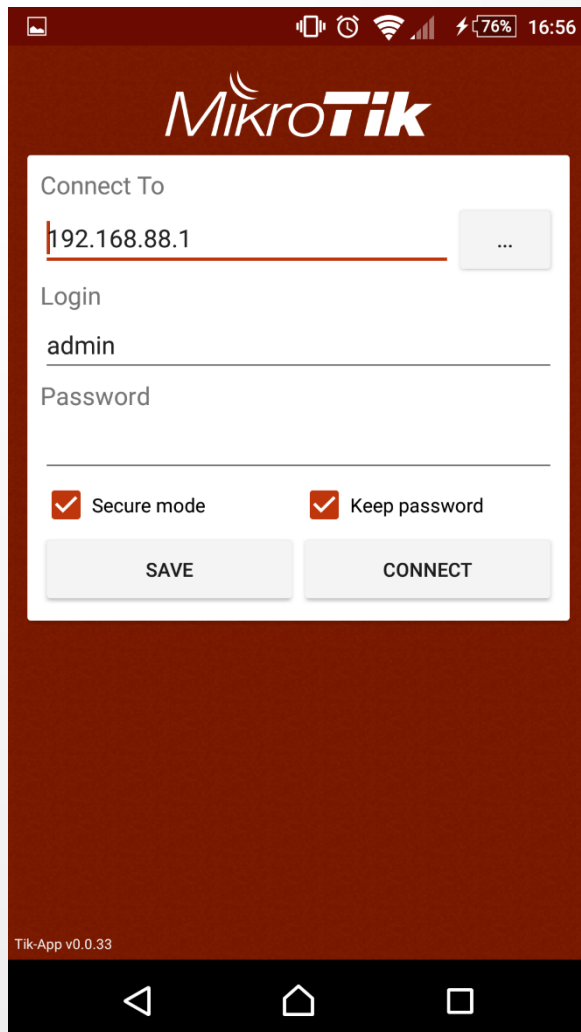
Ethernet (WAN) port is protected

- Connect laptop to wireless and use Winbox/WebfFg, telnet or ssh
- Connect android phone to wireless and use TikApp or WebFig
- Default IP address 192.168.88.1
- Default username: admin w/o password

Default configuration can be switched to CAP mode by holding reset button for 10 seconds.

TikApp

- Sign to testing program, link on Mikrotik forum
- Download TikApp in Play store



Router as station

Configure wireless settings manually to connect to any access point.

- Configure security profiles (authentication-type, mode, key)
- Configure wireless settings (station mode, frequency, band, SSID)

For repeater setups station mode should be “station-bridge”.

Or use wireless scan feature.

Wireless scan

Fastest way to connect to AP

The image shows a network management interface with two windows. The top window, 'Wireless Tables', has a tabbed interface with 'Scanner' selected. Below the tabs is a toolbar with various icons and buttons. A table below shows network statistics for 'wlan1'. The bottom window, 'Scanner', shows the interface for performing a scan on the 'wlan1' interface. It includes a 'Background Scan' checkbox and several control buttons. A table at the bottom lists detected APs with their addresses, SSIDs, channels, and signal/noise levels. The 'Connect' button is highlighted in red.

Wireless Tables

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

+ | - | ✓ | ✗ | 📁 | 🔍 | CAP | WPS Client | Setup Repeater | **Scanner** | Freq. Usage | Alignment | Wireless Sniffer | Wireless Snooper | Find

Name	Type	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx
R wlan1	Wireless (Atheros AR9...	0 bps	1280 bps	0	2	0 bps	1280

1 item out of 6 (1 selected)

Scanner

Interface: wlan1

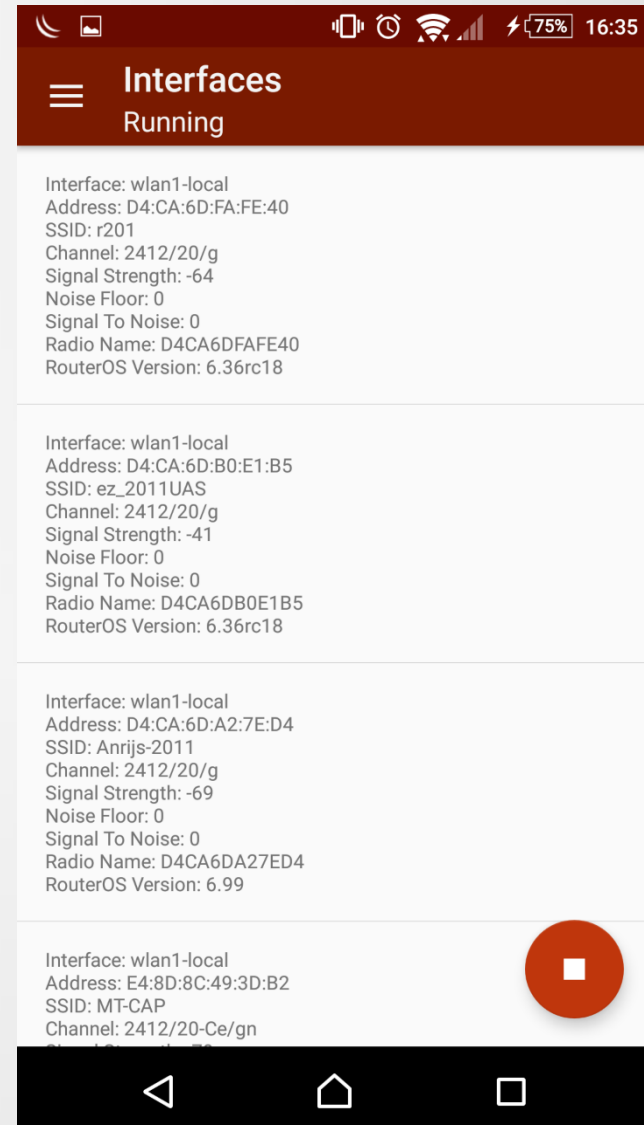
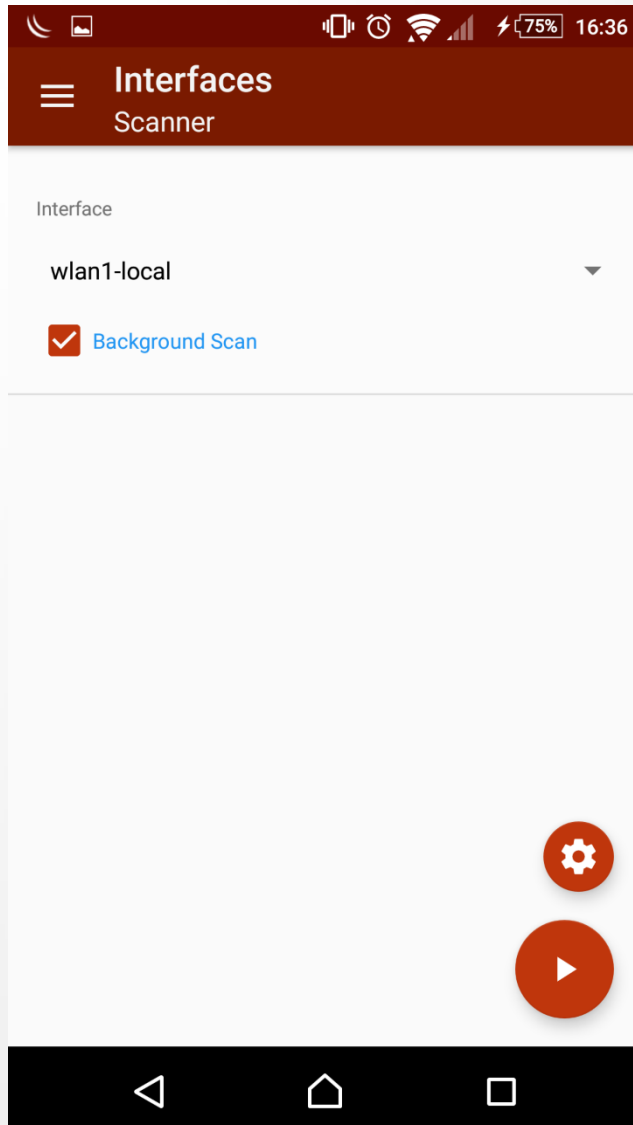
Background Scan

Start
Stop
Close
Connect
New Window

	Address	SSID	Channel	Signa...	Noise...	Signa...	Radio Name	RouterO...
AP	30:91:8F:9E:5A:03	TNCAP9...	2437/20-Ce/gn	-77	-108	31		
APRB	D4:CA:6D:83:77:03	BackBone	2447/20-eC/gn	-70	-107	37	D4CA6D837703	6.35.1
APRB	4E:5E:0C:61:B4:63	testAP	2447/20-eC/gn	-44	-107	63	4C5E0C61B463	6.36rc10

3 items (1 selected)

TikApp scan



Background Scan

- Supported for 802.11 protocol only
- Working conditions
 - Wireless interface should be enabled
 - For AP mode – when operating on fixed channel
 - For Station mode – when connected to AP
- Supported also on Virtual interfaces
 - Scan is only performed in channel where master interface is running

Frequency scan

Use scan tool, to find the best frequency

The screenshot shows a network management interface with two windows. The top window, 'Wireless Tables', has a tabbed interface with 'Interfaces' selected. It shows a table with one entry for 'wlan1'. The 'Freq. Usage' window is open, showing a table of frequency usage for the 'wlan1' interface. The table has three columns: Frequency (MHz), Usage, and Noise Floor (dBm). The highest usage is at 2452 MHz.

Frequency (MHz)	Usage	Noise F...
2412	0.5	-113
2417	0.0	-113
2422	1.7	-114
2427	0.0	-110
2432	0.0	-112
2437	2.3	-109
2442	5.0	-110
2447	5.3	-109
2452	25.3	-111
2457	1.2	-110
2462	0.5	-110

Repeater Setup

- Download and install **wireless-rep** package
- Add virtual AP interface
- Use the same SSID and security settings
- Add bridge interface with static MAC address
- Bridge physical wireless interface with virtual AP
- Add DHCP client on bridge interface (optionally)

Virtual Wireless Interfaces

- Supported for 802.11 protocol only
- Virtual AP and Client interface can be added on the same physical interface
- Multiple Virtual Wireless interfaces can be added
- Background scan is supported on Virtual Wireless Interfaces and is only performed in channel where master interface is running

Test throughput

Measure throughput between wireless devices

The screenshot shows a software interface with a 'Tools' menu on the left and a 'Bandwidth Test' window on the right. The 'Tools' menu includes options like 'New Terminal', 'MetaROUTER', 'Partition', 'Make Supout.tif', 'Manual', 'New WinBox', and 'Exit'. The 'Bandwidth Test' window is titled 'Bandwidth Test' and contains the following fields and controls:

- Test To: 192.168.1.1
- Protocol: udp tcp
- Local UDP Tx Size: 1500
- Remote UDP Tx Size: 1500
- Direction: receive
- TCP Connection Count: 20
- Local Tx Speed: [] bps
- Remote Tx Speed: [] bps
- Random Data
- User: pauls
- Password: []
- Lost Packets: 304
- Tx/Rx Current: 0 bps/35.8 Mbps
- Tx/Rx 10s Average: 0 bps/26.6 Mbps
- Tx/Rx Total Average: 0 bps/42.4 Mbps

At the bottom of the window, there is a graph showing Tx (blue) and Rx (red) throughput. The Rx bar is highlighted with a red box and labeled 'Rx: 35.8 Mbps'. Below the graph, the status is 'stopped'.

WPS Client Support

- Allows wireless client to get Pre-Shared Key configuration of the AP that has WPS Server enabled
- Gets information from any WPS Server running or can be specified to get only with specific SSID or MAC address
- Received configuration is shown on the screen and can be also saved to a new wireless security profile

Wireless Scan features

- Scan to file
 - Allows to save the scan results in a CSV format file
 - Supported with background scan
- Scan Round setting
 - Allows to do full scan of the scan-list and then stop scanning
 - Useful for remote scans on the clients
 - Supported with background scan as well

Station Roaming support

- Supported for 802.11 protocol only
- While connected to AP station does periodic background scans to look for a better AP
- When a better AP is found station roams to the new AP
- Time intervals between scans becomes shorter when signal becomes worse
- Time intervals between scans becomes longer when signal becomes better

CAPsMAN

- Controlled Access Point system Manager (CAPsMAN)
- Network consists of a number of 'Controlled Access Points' (CAP)
- CAP requires almost no configuration
 - connectivity to CAPsMAN (IP or MAC)
 - wireless lock to capsman:
`/interface wireless cap set lock-to-caps-man=yes`
- Central processing (default) or local forwarding

CAPsMAN Limitations

- 32 Radios per CAP
- 32 Virtual interfaces per master radio interface
- But unlimited CAPs (access points) supported by CAPsMAN
- CAPsMAN v1 not compatible with v2
- No Nstreme, NV2 support

Thank you!