

CAPsMAN SICE Controller

CAPsMAN Features

- Centralized management of SICE APs
- Dual Band AP support
- Provisioning of APs
- MAC and IP Layer communication with APs
- Certificate support for AP communication
- Full and Local data forwarding mode
- RADIUS MAC authentication

- Custom configuration support

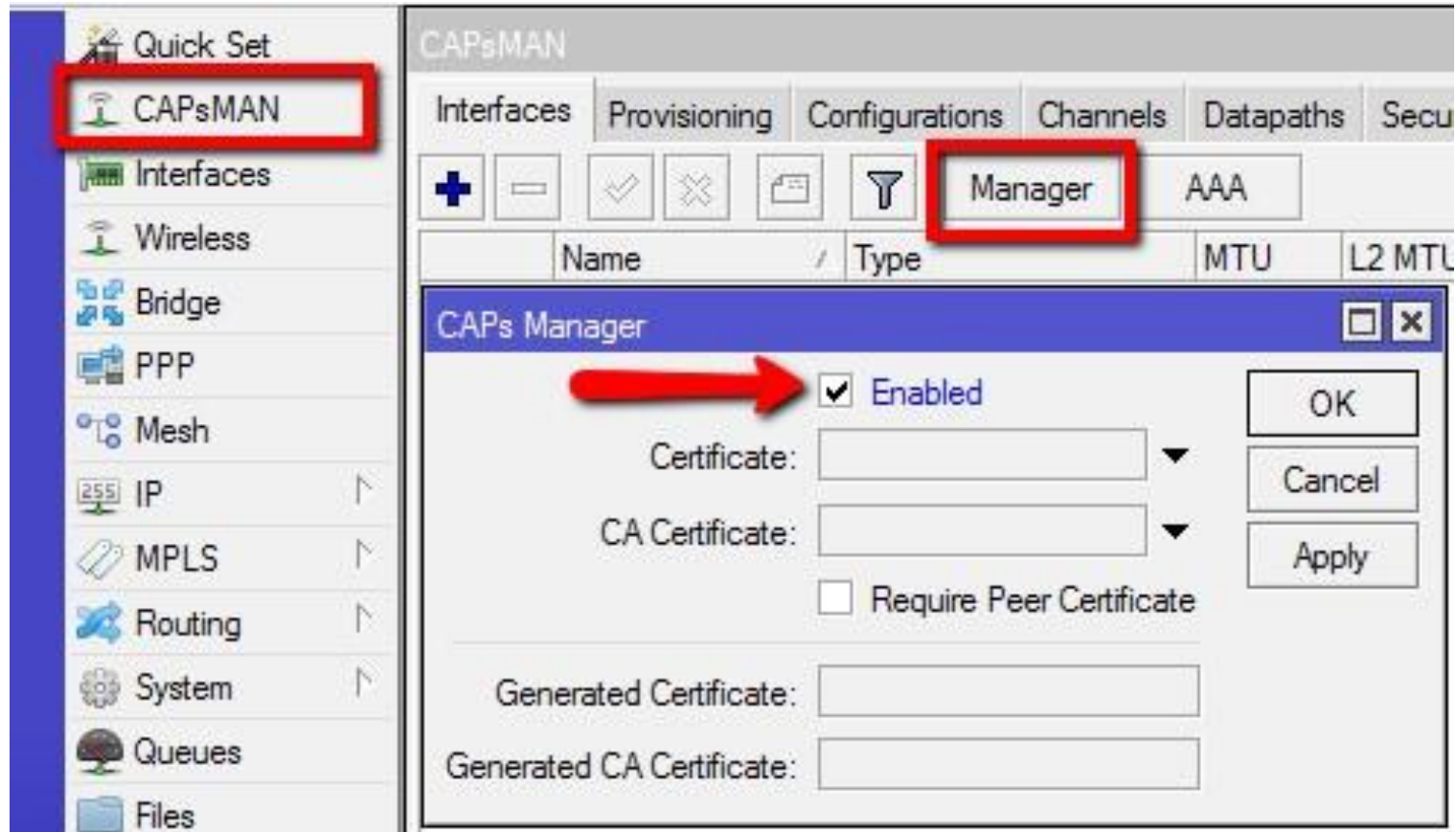
Requirements

- CAPsMAN controller
 - Newest OS v6.36.3 version
 - Wireless-rep package installed and enabled
- CAP
 - SICE based device
 - Newest OS v6.36.3 version
 - Radio (a/b/g/n/ac) wireless card
 - Wireless-rep package installed and enabled
 - At least Level4 license

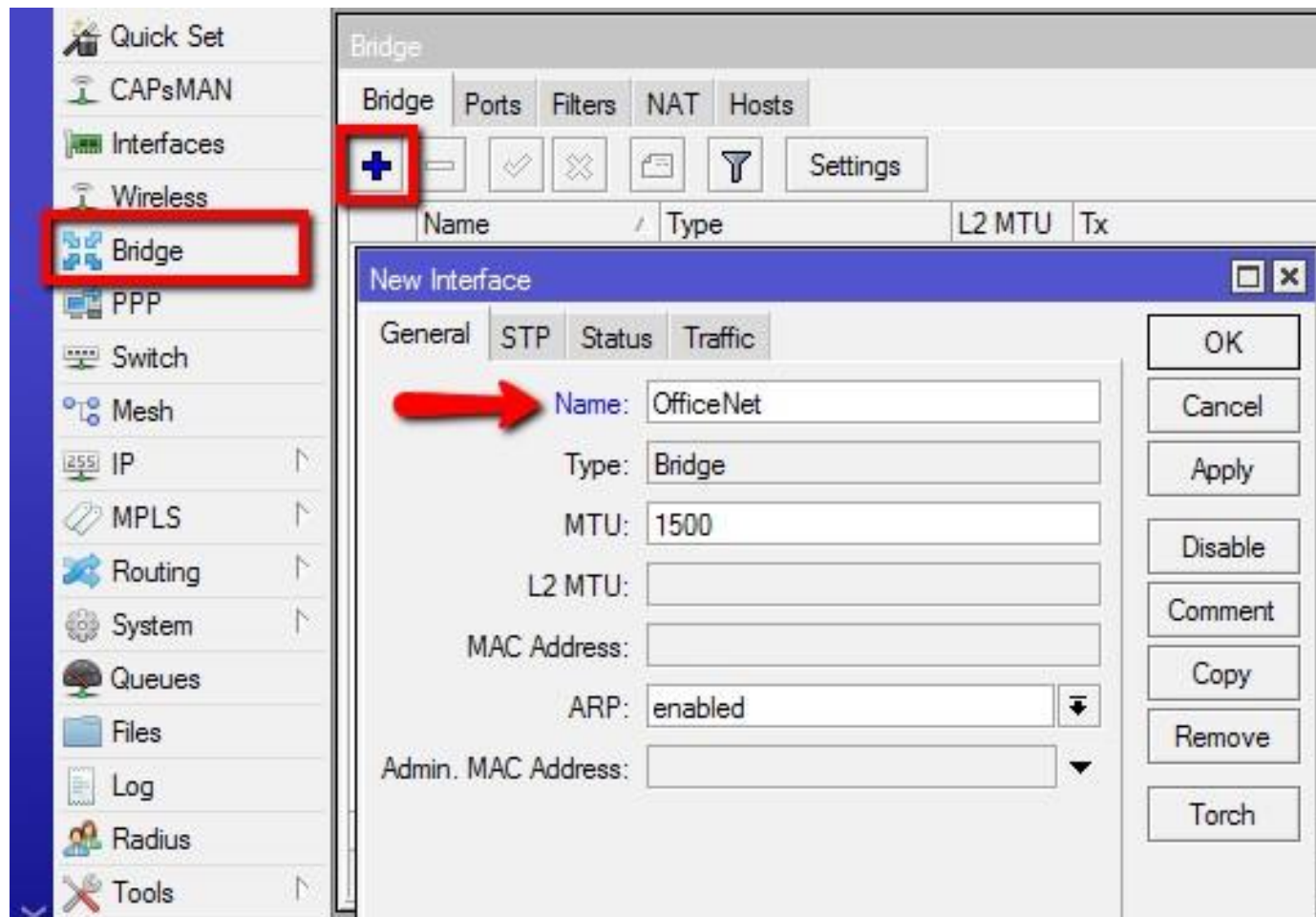
CAPsMAN Simple Setup

- Enable CAPsMAN service
- Create Bridge interface
- Add IP configuration to Bridge interface
- Create CAPsMAN Configuration
- Create Provisioning rule
- Enable CAP mode on the APs

- Enable the CAPsMAN service
-



- Create Bridge Interface



1. Add IP address
2. Add DHCP Server
3. Add NAT rule

The screenshot displays the MikroTik WinBox interface with the following configurations and actions highlighted:

- Left Sidebar:** The 'IP' menu item is highlighted with a red box.
- Address List:** A new address is being added. The 'Address' field is set to '10.10.10.1/24' and the 'Interface' is 'OfficeNet'. A red box with the number '1' highlights the 'Add' (+) button.
- DHCP Server:** The 'DHCP Setup' tab is selected. The 'DHCP Server Interface' is set to 'OfficeNet'. A red box with the number '2' highlights the 'Next' button.
- Firewall:** The 'NAT' tab is selected. A new NAT rule is being added. The 'Chain' is set to 'srcnat' and the 'Action' is 'masquerade'. A red box with the number '3' highlights the 'Add' (+) button.

• Add New CAPsMAN Configuration

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CAPsMAN

Interfaces Provisioning **Configurations** Channels Datapaths Security Cfg. Access List Remote CAP Radio Registration Table

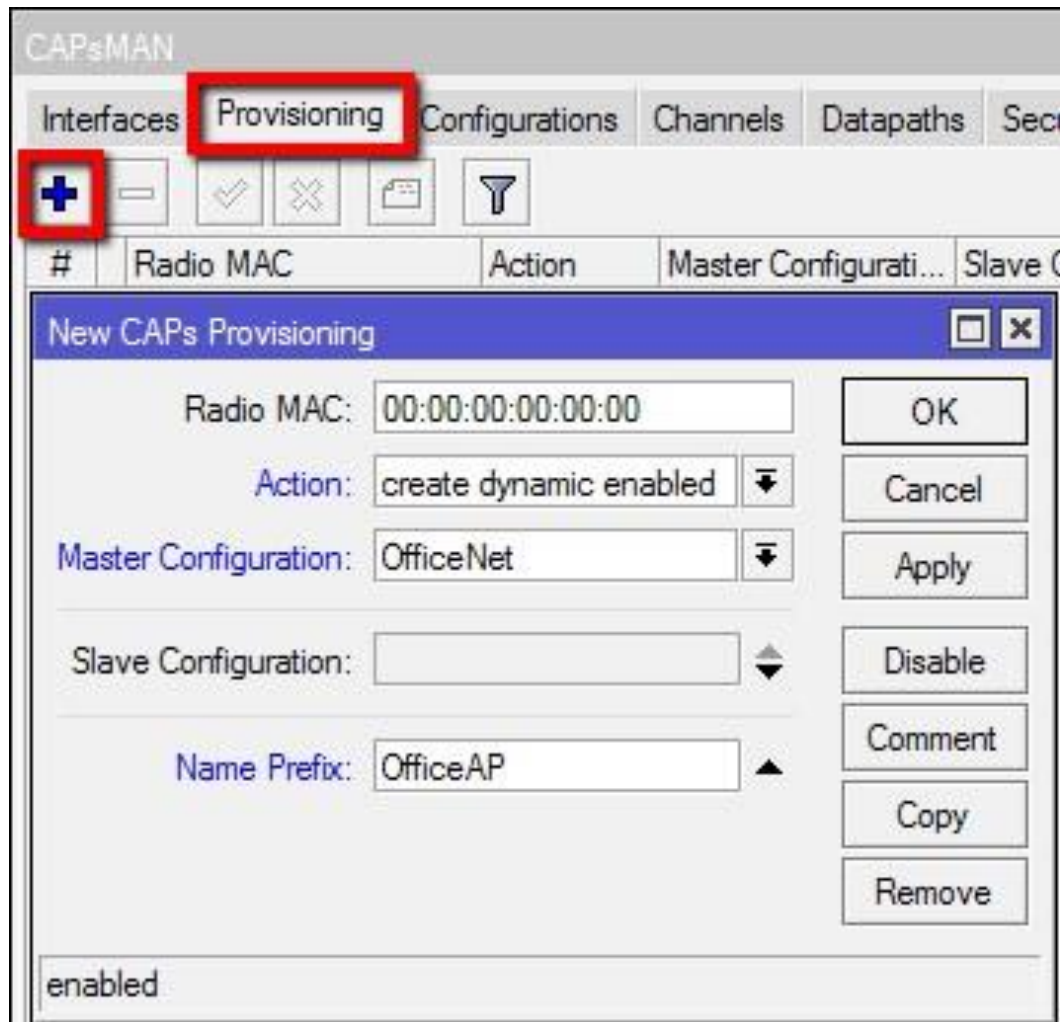
+ - [Icon] [Icon] Find

Name	SSID	Hide SSID	Load Bal...	Country	Channel	Frequency	Band	Datapat
New CAPs Configuration								
Wireless	Channel	Datapath	Security					
Name: OfficeNet								
Mode:								
SSID: Office								
Hide SSID:								
Load Balancing Group:								
Country: united states								
Max Station Count:								
Multicast Helper:								
HT Tx Chains:								
HT Rx Chains:								
HT Guard Interval:								

New CAPs Configuration			
Wireless	Channel	Datapath	Security
Datapath:			
Bridge: OfficeNet			
Bridge Cost:			
Bridge Horizon:			
Local Forwarding:			
Client To Client Forwarding:			
VLAN Mode:			
VLAN ID:			

New CAPs Configuration			
Wireless	Channel	Datapath	Security
Security:			
Authentication Type: <input checked="" type="checkbox"/> WPA PSK <input checked="" type="checkbox"/> WPA2 PSK <input type="checkbox"/> WPA EAP <input type="checkbox"/> WPA2 EAP			
Encryption: <input checked="" type="checkbox"/> aes ccm <input type="checkbox"/> tkip			
Group Encryption: aes ccm			
Passphrase: OfficeNet			
EAP Methods:			

- Add new Provisioning rule

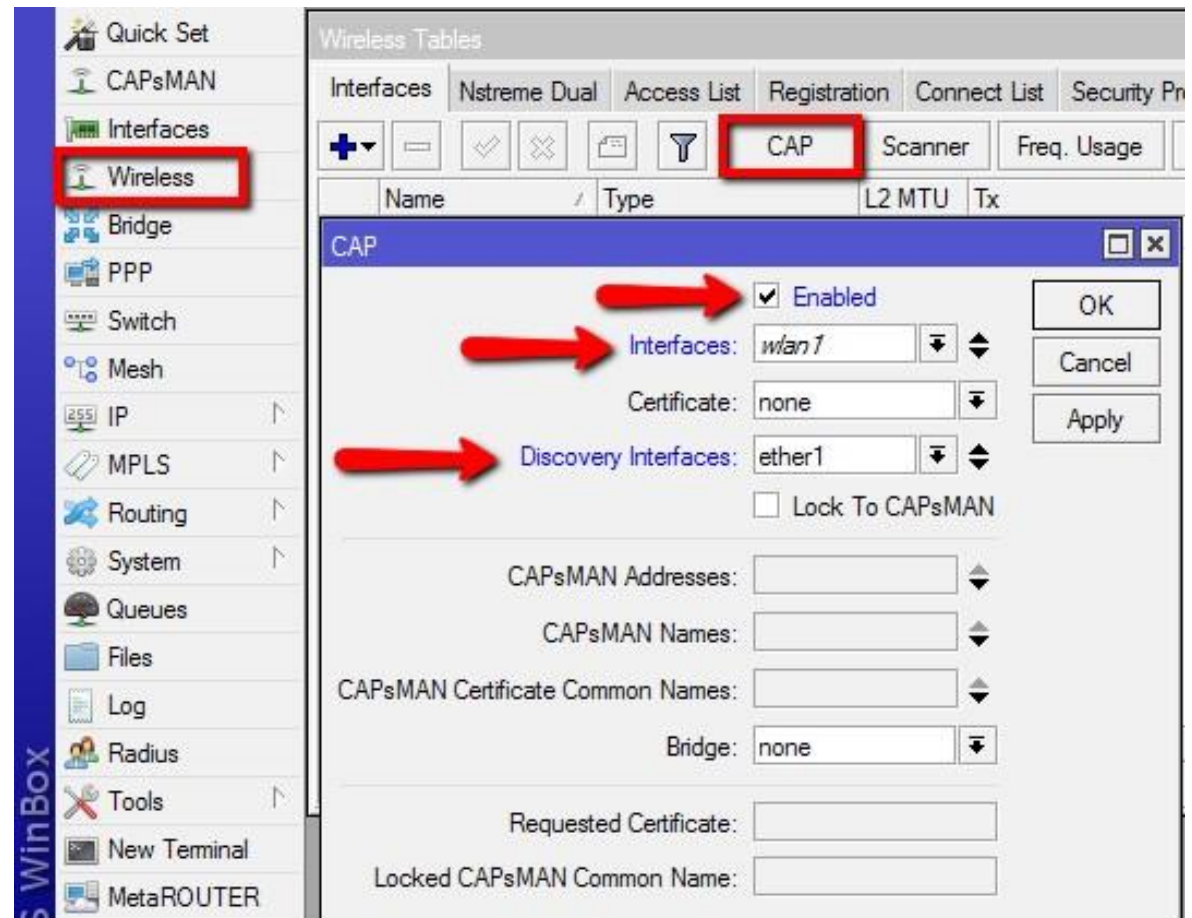


The screenshot shows the CAPsMAN software interface. The 'Provisioning' tab is selected and highlighted with a red box. Below the tab, a toolbar contains several icons, with the first icon (a blue plus sign) also highlighted with a red box. A dialog box titled 'New CAPs Provisioning' is open, displaying the following fields and options:

- Radio MAC: 00:00:00:00:00:00
- Action: create dynamic enabled
- Master Configuration: OfficeNet
- Slave Configuration: (empty)
- Name Prefix: OfficeAP

On the right side of the dialog, there are buttons for OK, Cancel, Apply, Disable, Comment, Copy, and Remove. At the bottom left of the dialog, the status 'enabled' is displayed.

- Configure the AP to use CAP mode
 - Enable wireless-rep package
 - Enable CAP mode
- By configuration in Wireless CAP menu



- Check the Status of the CAPsMAN CAP interface

CAPsMAN

CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security

+ - ✓ ✗ [Icon] [Icon] Manager AAA

	Name	Type	MTU	L2 MTU
DSMB	OfficeAP1	Interfaces	1500	1600

Interface <OfficeAP1>

General Wireless Channel Datapath Security Status Traffic

Current State: running-ap

Current Channel: 2427/20-Ce/gn(30dBm)

Current Rate Set: CCK:1-11 OFDM:6-54 BW:1x-2x HT:0-7

Current Basic Rate Set: OFDM:6 BW:1x HT:0-7

CAP

Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List Security

+ - ✓ ✗ [Icon] [Icon] CAP Scanner Freq. Usage

	Name	Type	L2 MTU	Tx
	--- managed by CAPsMAN			
	--- channel: 2427/20-Ce/gn(30dBm), SSID: Office, CAPsMAN forwarding			
X	wlan1	Wireless (Atheros AR9...	1600	

CAPsMAN Registration table

CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security Cfg. Access List Remote CAP Radio **Registration Table**

Interface	MAC Address	Tx Rate	Rx Rate	Tx Signal	Rx Signal	Uptime	Tx/Rx Packets	Tx/Rx Bytes
OfficeAP3	18:34:51:41:75:CD	65Mbps-...	65Mbps-...	0	-44	00:03:17....	31 395/33 212	29.8 MiB/29.5 MiB

1 item

CAPs AP Client <18:34:51:41:75:CD>

Interface:

MAC Address:

Tx Rate:

Rx Rate:

Tx Rate Set:

Tx Signal:

Rx Signal:

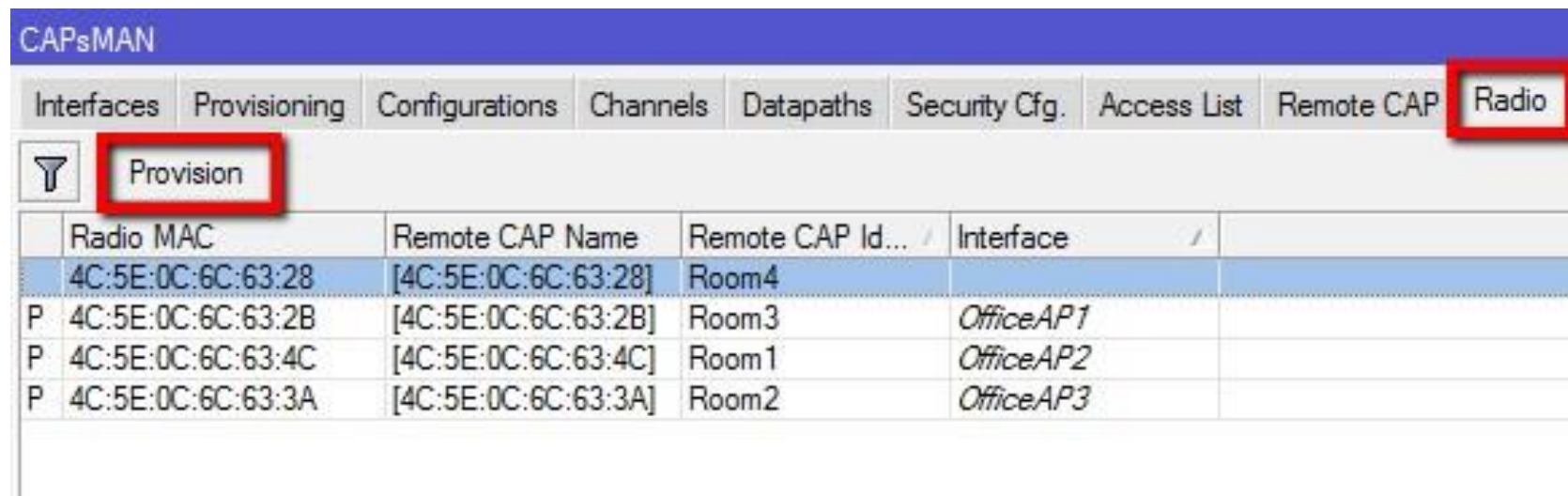
Uptime:

Tx/Rx Packets:

Tx/Rx Bytes:

Provisioning

- Changing Provisioning rules doesn't effect already configured CAPs, manual Provisioning required:
 - Remove CAP interface
 - Initiate Provision command on the CAP





The screenshot shows the CAPsMAN web interface. The 'Radio' tab is selected in the top navigation bar. In the left sidebar, the 'Provision' button is highlighted. The main table displays the following data:

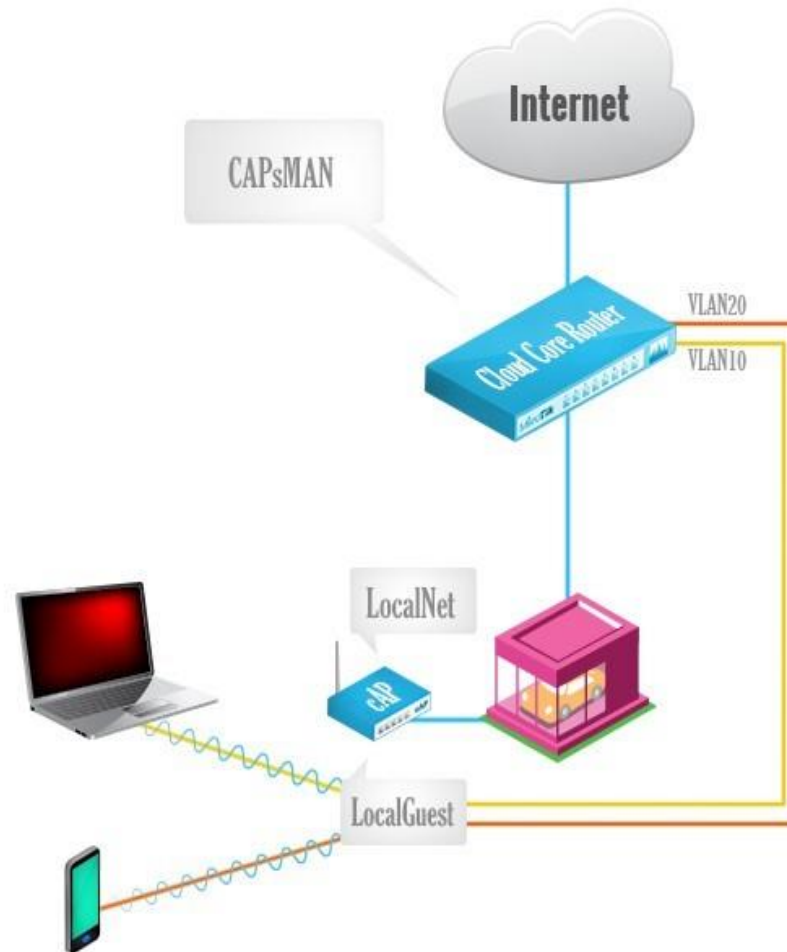
	Radio MAC	Remote CAP Name	Remote CAP Id...	Interface	
	4C:5E:0C:6C:63:28	[4C:5E:0C:6C:63:28]	Room4		
P	4C:5E:0C:6C:63:2B	[4C:5E:0C:6C:63:2B]	Room3	OfficeAP1	
P	4C:5E:0C:6C:63:4C	[4C:5E:0C:6C:63:4C]	Room1	OfficeAP2	
P	4C:5E:0C:6C:63:3A	[4C:5E:0C:6C:63:3A]	Room2	OfficeAP3	

CAP Identification

- MAC/IP address • System Identity
- Board model • Main wireless MAC
- Serial Number of the Board • State of the CAP
- OS version • Provided radio count

CAPsMAN									
Interfaces	Provisioning	Configurations	Channels	Datapaths	Security Cfg.	Access List	Remote CAP	Radio	Registration Table
		Provision							
Address	Name	Board	Serial	Version	Identity	Base MAC	State	Radios	
4C:5E:0C:6C:63:26	[4C:5E:0C:6C:63:28]	RBmAP2n	52760434DCE4	6.19	Room4	4C:5E:0C:6C:63:28	Run	1	
4C:5E:0C:6C:63:29	[4C:5E:0C:6C:63:2B]	RBmAP2n	5276046C9DA3	6.19	Room3	4C:5E:0C:6C:63:2B	Run	1	
4C:5E:0C:6C:63:38	[4C:5E:0C:6C:63:3A]	RBmAP2n	527604845E6A	6.19	Room2	4C:5E:0C:6C:63:3A	Run	1	
4C:5E:0C:6C:63:4A	[4C:5E:0C:6C:63:4C]	RBmAP2n	527604D1D5D4	6.19	Room1	4C:5E:0C:6C:63:4C	Run	1	
:ffff:10.5.125.172	[D4:CA:6D:A2:85:60]	RBmAP2n	527602095F22	6.19	Room5	D4:CA:6D:A2:85:60	Run	1	

CAPSMAN VLAN ASSIGNMENT



- When using Local Forwarding CAPsMAN can assign VLAN ID to specific CAP interface or even specific wireless client
- Create Slave interface with Vlan tag

CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security Cfg. Access List Remote CAP Radio Registration Table

+ - ✓ ✗ 📁 📏 Manager AAA

Name	Type	MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	SSID
MB LocalAP1	Interfaces	1500	1600			0 bps	0 bps	0 LocalNet

New Interface

General Wireless Channel Datapath

Name: LocalAPGuest

Type: Interfaces

MTU: 1500

L2 MTU:

MAC Address: 00:00:00:00:00:00

ARP: enabled

Radio MAC: 00:00:00:00:00:00

Master Interface: LocalAP1

New Interface

General Wireless Channel Datapath

Configuration:

Mode:

SSID: LocalGuest

Hide SSID:

Load Balancing Group:

Country:

Max Station Count:

Multicast Helper:

HT Tx Chains:

HT Rx Chains:

HT Guard Interval:

New Interface

General Wireless Channel Datapath Security Status Traffic

Datapath:

Bridge:

Bridge Cost:

Bridge Horizon:

Local Forwarding: ☒

Client To Client Forwarding:






VLAN Mode: use tag



VLAN ID: 10

- Create Access List rule for specific client to get tagged to Management Vlan on the same CAP interface
- Move the Access List rule above the previous ones
- Create VLAN interfaces on the


CAPsMAN


Interfaces Provisioning Configurations Channels Datapaths Security Cfg. **Access List**


+     


#	MAC Address	MAC Mask	Interface	Signal Ra...	Action
0	 18:34:51:00:00:00	FF:FF:FF:00:00:00			accept
1					query re

New CAPs Access Rule


MAC Address: 18:34:51:41:75:CD 


MAC Mask: 


Interface: LocalAPGuest 


Signal Range: 


Time


Action: accept 


AP Tx Limit: 


Client Tx Limit: 

Private Passphrase: 

Client To Client Forwarding: 

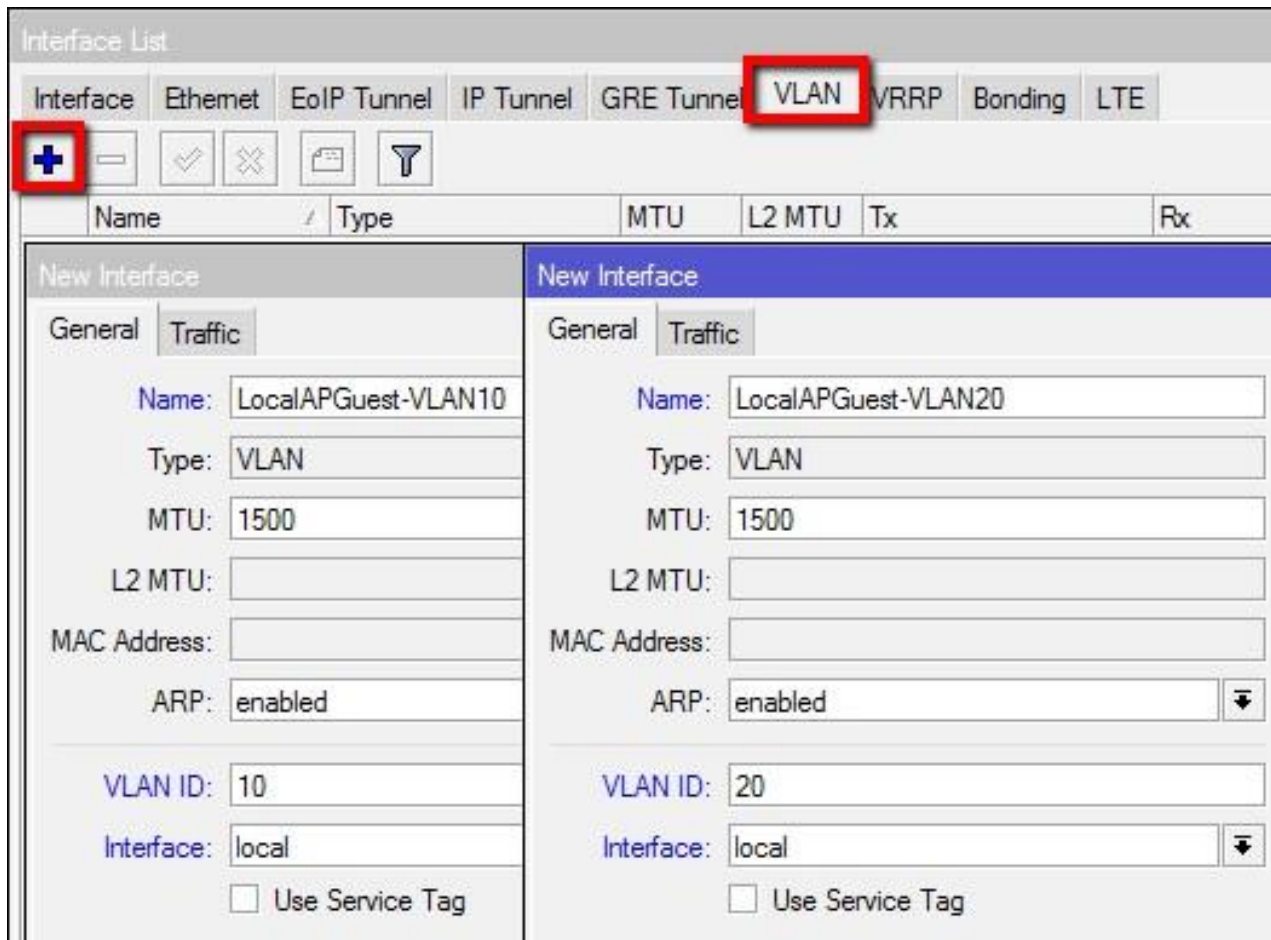
RADIUS Accounting: 

VLAN Mode: use tag 

VLAN ID: 20 

OK Cancel Apply Disable Comment Copy Remove

CAPsMAN router interface where the CAPs are connected



Interface List

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

+ - ✓ ✗ [Icon] [Icon]

Name	Type	MTU	L2 MTU	Tx	Rx
New Interface					
General Traffic					
Name:	LocalAPGuest-VLAN10				
Type:	VLAN				
MTU:	1500				
L2 MTU:					
MAC Address:					
ARP:	enabled				
VLAN ID:	10				
Interface:	local				
<input type="checkbox"/> Use Service Tag					

New Interface					
General Traffic					
Name:	LocalAPGuest-VLAN20				
Type:	VLAN				
MTU:	1500				
L2 MTU:					
MAC Address:					
ARP:	enabled				
VLAN ID:	20				
Interface:	local				
<input type="checkbox"/> Use Service Tag					

- Assign IPs to VLAN interfaces on CAPsMAN

The screenshot shows the Mikrotik WinBox interface. The 'Address List' window is open, displaying a table with one entry. The 'New Address' dialog is also open, showing the configuration for a new address: 10.10.12.1/24, assigned to the 'LocalAPGuest-VLAN10' interface. The 'Address List' window has a toolbar with a '+' button highlighted in a red box. The 'New Address' dialog has buttons for OK, Cancel, Apply, Disable, Comment, Copy, and Remove.

Address	Network	Interface	Enabled
10.10.12.1/24		LocalAPGuest-VLAN10	enabled

CAPsMAN Dual Band CAP

- If the Channel settings are not specified it will automatically use the supported band/channel
- If specific Channel settings are required then specific Provisioning rules are required
 - Custom Channel settings
 - Dual band wireless interface support
- Create 3 configurations:
 - Config for both bands radio
 - Config for 5ghz only radio
 - Config for 2.4ghz only radio

CAPsMAN

Interfaces Provisioning **Configurations** Channels Datapaths Security Cfg. Access List Remote CAP Radio Registration Table

+ - [Folder Icon] [Filter Icon]

Name	SSID	Hide SSID	Load Bal...	Country	Channel	Frequency	Band
CAPs Configuration <Both Bands>							
Wireless	Channel	Datapath	Security				
Channel: <input type="text"/>							
Frequency: <input type="text"/>							
Width: <input type="text" value="20"/>							
Band: <input type="text" value="5ghz-a/n"/>							
Extension Channel: <input type="text"/>							
Tx. Power: <input type="text"/>							
CAPs Configuration <5ghz Config>							
Wireless	Channel	Datapath	Security				
Channel: <input type="text"/>							
Frequency: <input type="text"/>							
Width: <input type="text" value="20"/>							
Band: <input type="text" value="5ghz-a/n"/>							
Extension Channel: <input type="text"/>							
Tx. Power: <input type="text"/>							
CAPs Configuration <2.4ghz Config>							
Wireless	Channel	Datapath	Security				
Channel: <input type="text"/>							
Frequency: <input type="text"/>							
Width: <input type="text"/>							
Band: <input type="text" value="2ghz-b/g/n"/>							
Extension Channel: <input type="text"/>							
Tx. Power: <input type="text"/>							

- Create 3 Provisioning rules
 - For A/N,G/N hardware use Both Bands config
 - For A/N hardware use 5ghz config
 - For G/N hardware use 2.4ghz config

CAPsMAN







Interfaces **Provisioning** Configurations Channels Datapaths Security Cfg. Access List Remote CAP Radio Registration Table



#	Radio MAC	Action	Master Configurati...	Slave Configuration
New CAPs Provisioning				
	Radio MAC: 00:00:00:00:00:00			
	Hw. Supported Modes: an			
	gn			
	Action: create dynamic enabled			
	Master Configuration: Both Bands			
	Slave Configuration:			
	Name Prefix:			
New CAPs Provisioning				
	Radio MAC: 00:00:00:00:00:00			
	Hw. Supported Modes: an			
	Action: create dynamic enabled			
	Master Configuration: 5ghz Config			
	Slave Configuration:			
	Name Prefix:			
New CAPs Provisioning				
	Radio MAC: 00:00:00:00:00:00			
	Hw. Supported Modes: gn			
	Action: create dynamic enabled			
	Master Configuration: 2.4ghz Config			
	Slave Configuration:			
	Name Prefix:			

CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security Cfg. Access List Remote CAP Radio Registr







 Manager AAA

	Name	Type	MTU	L2 MTU	Tx	Rx	T
DMB	cap10	Interfaces	1500	1600	0 bps	0 bps	
DMB	cap9	Interfaces	1500	1600	0 bps	0 bps	

Interface <cap9>

General Wireless Channel Datapath Security

Configuration: 2.4ghz Config

Mode:

SSID: 2.4ghz band

Hide SSID:

Interface <cap10>

General Wireless Channel Datapath Security Status Traffic

Configuration: 5ghz Config



Mode:


SSID: 5ghz band

Hide SSID:

Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List Security Profiles Channels

 CAP Scanner Freq. Usage Alignment Wireless Sniffer


	Name	Type	L2 MTU	Tx	Rx	Tx
-- managed by CAPsMAN						
-- channel: 5220/20-Ce/an(17dBm), SSID: 5ghz band, CAPsMAN forwarding						
X	wlan1	Wireless (Atheros AR9...	1600	0 bps	0 bps	
-- managed by CAPsMAN						
-- channel: 2427/20-Ce/gn(30dBm), SSID: 2.4ghz band, CAPsMAN forwarding						
X	wlan2	Wireless (Atheros AR9...	1600	0 bps	0 bps	

CAPsMAN Configuration

override configuration

overrides Channel setting

- Interface overrides Channel and Configuration setting



The image displays four screenshots of the CAPsMAN configuration interface, illustrating the hierarchy of settings:

- New CAPs Channel:** Shows the initial channel configuration with Name: channel1, Frequency: 2412 MHz, and Width: (empty).
- New CAPs Configuration:** Shows the configuration for a specific channel, with Channel: channel1, Frequency: 2437 MHz, and Width: (empty).
- New Interface:** Shows the configuration for a new interface, with Channel: channel1, Frequency: 2462 MHz, and Width: (empty).
- Interface <cap1>:** Shows the final configuration for the interface, with Current State: running-ap, Current Channel: 2462/20-eC/gn(30dBm), Current Rate Set: CCK:1-11 OFDM:6-54 BW:1x-2x HT:0-7, and Current Basic Rate Set: OFDM:6 BW:1x HT:0-7.