

CAPsMAN Quick Setup Guide, Latest version new features , How to maintain a failover controller(CAPsMAN)



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MUM Central America - Guatemala

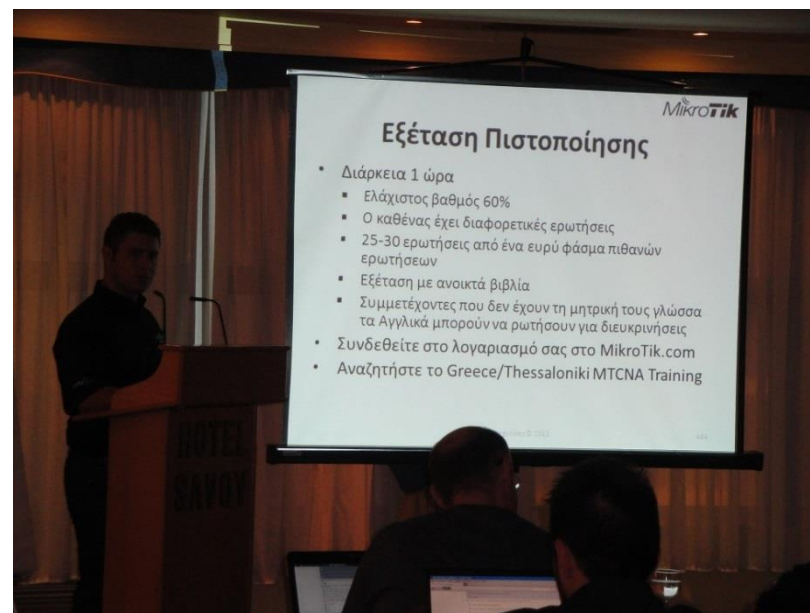
20th January 2017

About Me

My Name:

Georgios Argyrides

➤ You can call me “George”
(its easier)



About Me

- Born in Cyprus
(Europe, Near Greece)
 - Can Speak English & Greek

Experience:

- Computer Technician
 - Satellite TV & Aerial Engineer
 - VoIP Consultant / Voice Engineer
 - Systems / Network Administrator
 - Server Infrastructure Engineer
 - Internet Security Consultant
 - ISP / WISP Consultant
- 1st MikroTik Certified Consultant in Greece since 2011
 - 1st MikroTik Certified Trainer in Greece since 2012



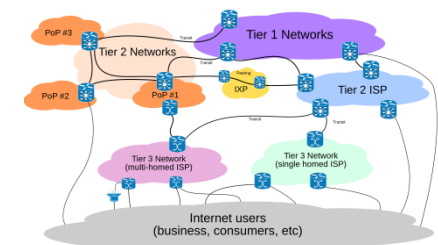
About Me

Education: Academic & Professional Qualifications

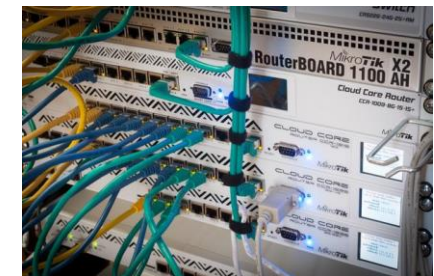
- BSc (Hon) Applied Computing (UK)
- All MikroTik Certifications
 - MTCNA,MTCRE,MTCWE,MTCTCE,MTCUME,MTCINE, MTCIPv6E
- MikroTik Certified Trainer
- Cyberoam Certified Network & Security Professional (CCNSP)
- RIPE Database Expert Course
- Digium Certified Asterisk Administrator (dCAA)

About Me

- Providing MikroTik Training (On-Site)
- Providing On-Demand/Long Term worldwide:
 - Consultancy Services
 - Network Architecture Services
 - Project Management Services



➤ My contact details at the end of this Presentation



This Presentation Objective

- CAPsMAN Quick Setup
- Latest CAPsMAN new features
- Some Wireless-rep new features
- How to maintain a failover controller (CAPsMAN)

CAPsMAN Features

- Centralized management of RouterOS 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

Definitions

?CAP?? CAPs? CAPsMAN? AP? Router?

CAPsMAN

- Controlled **A**ccess **P**oint
system **M**anager

➤ **CAPsMAN** = a MikroTik router

CAP

- Controlled **A**ccess **P**oint

➤ **CAP** = a MikroTik router

➤ **CAPs** = many Mikrotik routers

Requirements

CAPsMAN

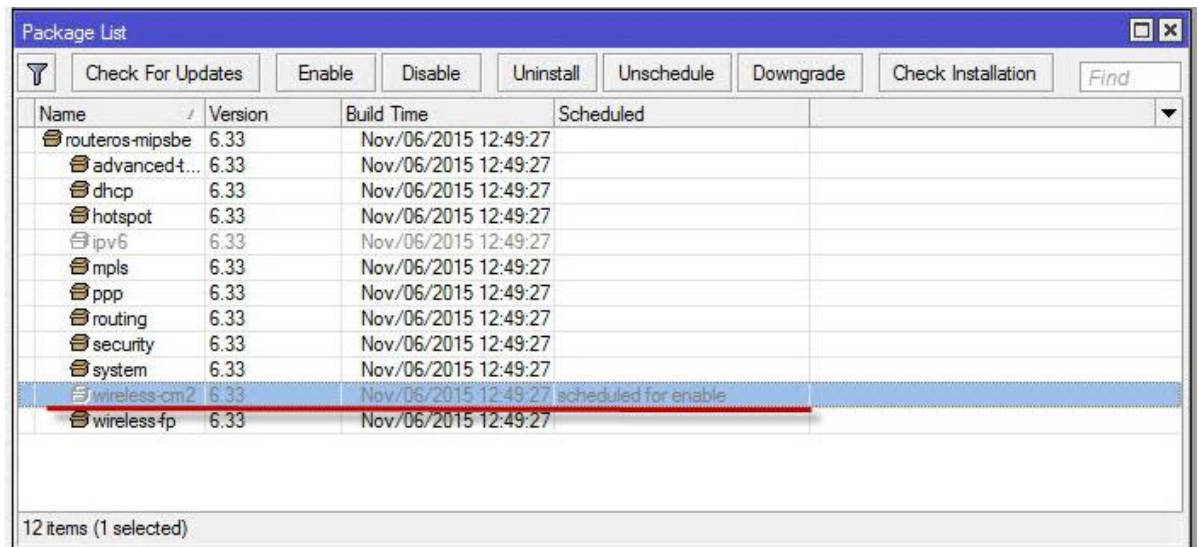
1. x86 or RouterBOARD based device
2. RouterOS v6.11+ version (Use Latest!)
3. Wireless-fp package installed and enabled

CAPs

1. X86 or RouterBOARD based device
2. RouterOS v6.11+ version(Use Latest!)
3. Atheros chipset (a/b/g/n/ac) wireless card
4. Wireless-fp package installed and enabled
5. At least Level4 RouterOS license

CAPsMAN v1 & v2

- ❖ Wireless-fp package introduces CAPsMAN v1 (2014 ROS v6.11+)
- ❖ Wireless-cm2 package introduces CAPsMAN v2 (2015 ROS 6.23+)
 - Improvements
 - Some new features



Name	Version	Build Time	Scheduled
routeros-mipsbe	6.33	Nov/06/2015 12:49:27	
advanced+	6.33	Nov/06/2015 12:49:27	
dhcp	6.33	Nov/06/2015 12:49:27	
hotspot	6.33	Nov/06/2015 12:49:27	
ipv6	6.33	Nov/06/2015 12:49:27	
mpls	6.33	Nov/06/2015 12:49:27	
ppp	6.33	Nov/06/2015 12:49:27	
routing	6.33	Nov/06/2015 12:49:27	
security	6.33	Nov/06/2015 12:49:27	
system	6.33	Nov/06/2015 12:49:27	
wireless-cm2	6.33	Nov/06/2015 12:49:27	scheduled for enable
wireless-fp	6.33	Nov/06/2015 12:49:27	

- ❖ CAPsMAN v2 is already stable and is widely used
- ⊗ Warning: CAPsMAN/CAP v1 is not compatible with v2!
 - Upgrade or downgrade everything in the network

CAPsMAN v2 New features

- CAPsMAN automatic upgrade of all CAP clients (configurable)
- Improved CAP<->CAPsMAN data connection protocol
- Added "Name Format, Name Prefix Identity/CommonName Regexp, IP Address Ranges" setting for Provision rules
- Improved logging entries when client roams between the CAPs
- Added L2 Path MTU discovery

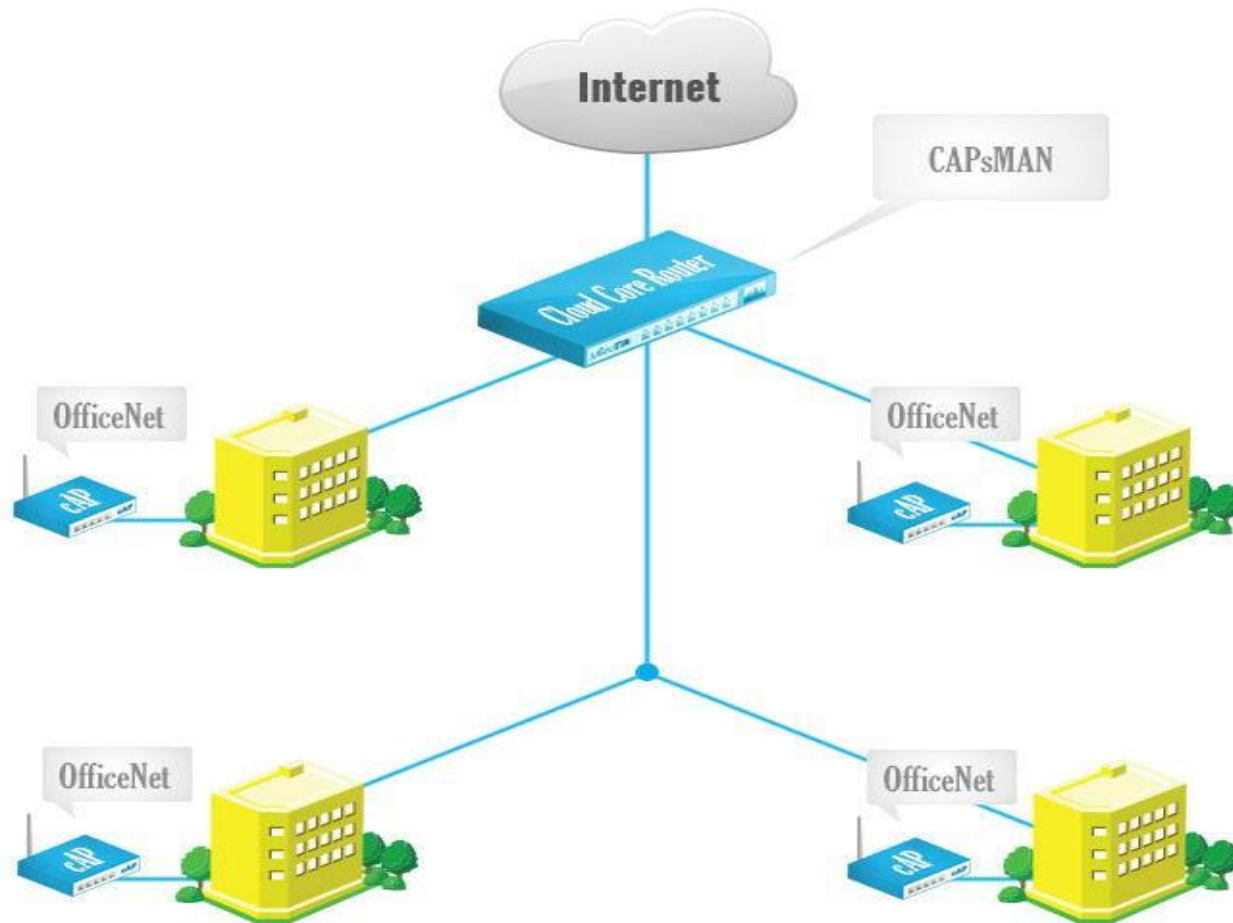
RouterOS 6.37 wireless-rep

- ❖ Wireless package for RouterOS 6.37:
 - Removes **all** existing wireless packages
 - Installs **wireless-rep**
 - **Wireless-rep** is renamed to **wireless**

- ❖ Using 6.37+ is strongly suggested for CAPsMAN
 - ❖ Today 6.38.1 is a good version

- Lets see CAPsMAN Quick Guide ,later we will discuss wireless-rep new features

CAPsMAN Simple Setup



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

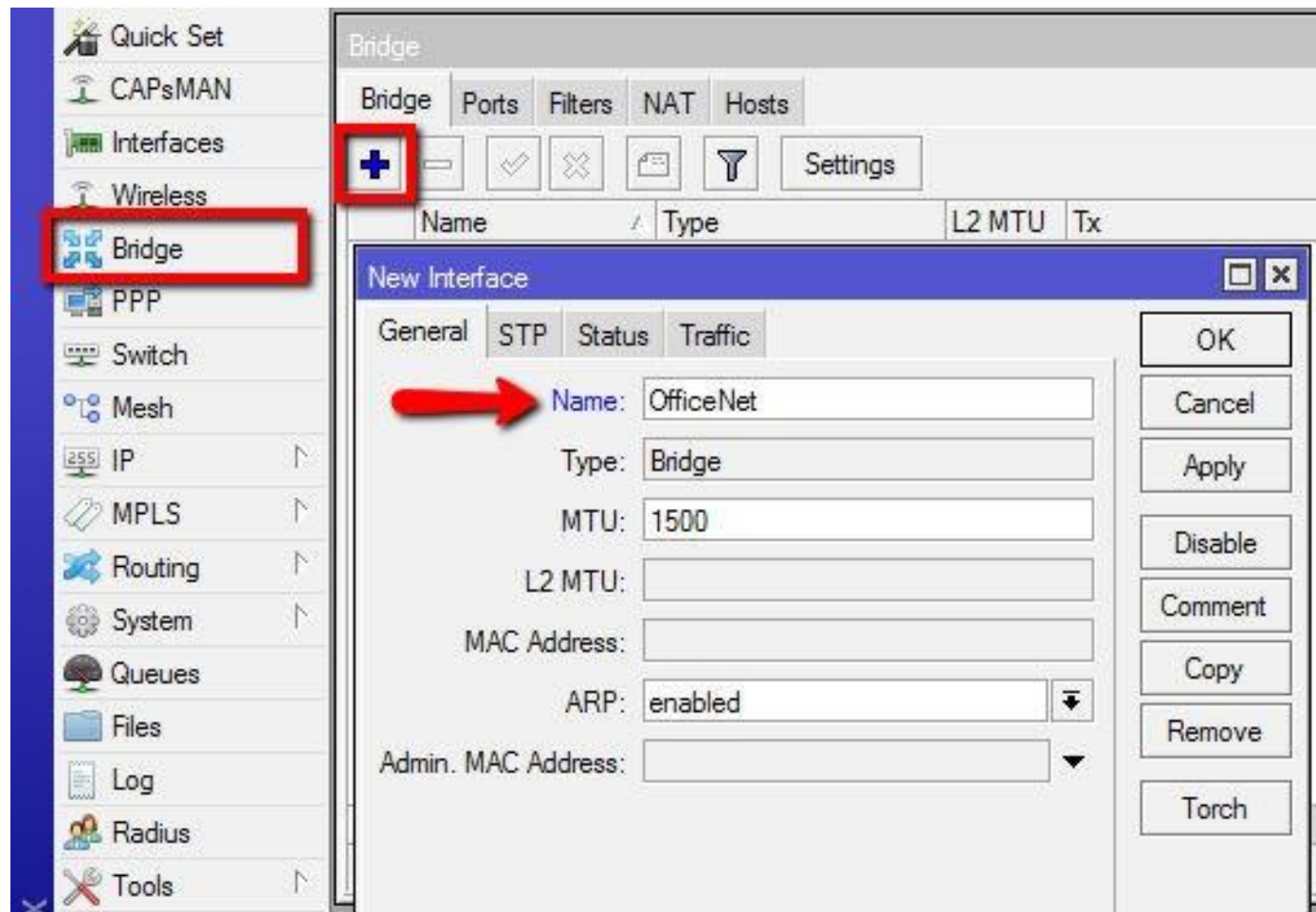
CAPsMAN Simple Setup

- Enable the CAPsMAN service

The screenshot displays the Mikrotik WinBox interface for configuring CAPsMAN. On the left sidebar, the 'CAPsMAN' menu item is highlighted with a red box. The main window shows the 'CAPsMAN' configuration page with several tabs: 'Interfaces', 'Provisioning', 'Configurations', 'Channels', 'Datapaths', and 'Security'. The 'Manager' tab is selected and highlighted with a red box. Below the tabs, there are several icons for adding, deleting, and filtering configurations. A table with columns 'Name', 'Type', 'MTU', and 'L2 MTU' is visible. A 'CAPs Manager' dialog box is open, showing the 'Enabled' checkbox checked with a red arrow pointing to it. Other fields in the dialog include 'Certificate', 'CA Certificate', 'Require Peer Certificate', 'Generated Certificate', and 'Generated CA Certificate'. Buttons for 'OK', 'Cancel', and 'Apply' are on the right.

CAPsMAN Simple Setup

- Create Bridge Interface



CAPsMAN Simple Setup

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

The screenshot displays the Mikrotik WinBox interface with three windows open, each with a red box and a number indicating a step in the setup process:

- Step 1:** The 'Address List' window is open, showing the 'New Address' dialog. 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 'New Address' dialog.
- Step 2:** The 'DHCP Server' window is open, showing the 'DHCP Setup' dialog. The 'DHCP Server Interface' is set to 'OfficeNet'. A red box with the number '2' highlights the 'DHCP Setup' dialog.
- Step 3:** The 'Firewall' window is open, showing the 'New NAT Rule' dialog. The 'Chain' is set to 'srcnat' and the 'Action' is 'masquerade'. A red box with the number '3' highlights the 'New NAT Rule' dialog.

The left sidebar shows the 'IP' menu item highlighted with a red box. The 'DHCP Setup' dialog has a 'Next' button highlighted with a red box.

CAPsMAN Simple Setup

- Add new CAPsMAN Configuration

The screenshot displays the CAPsMAN web interface with the following configuration steps highlighted by red boxes:

- Configurations** tab selected in the top navigation bar.
- +** button (Add) highlighted in the toolbar.
- Wireless** tab selected in the 'New CAPs Configuration' panel.
- Datapath** tab selected in the 'New CAPs Configuration' panel.
- Security** tab selected in the 'New CAPs Configuration' panel.

The configuration fields are as follows:

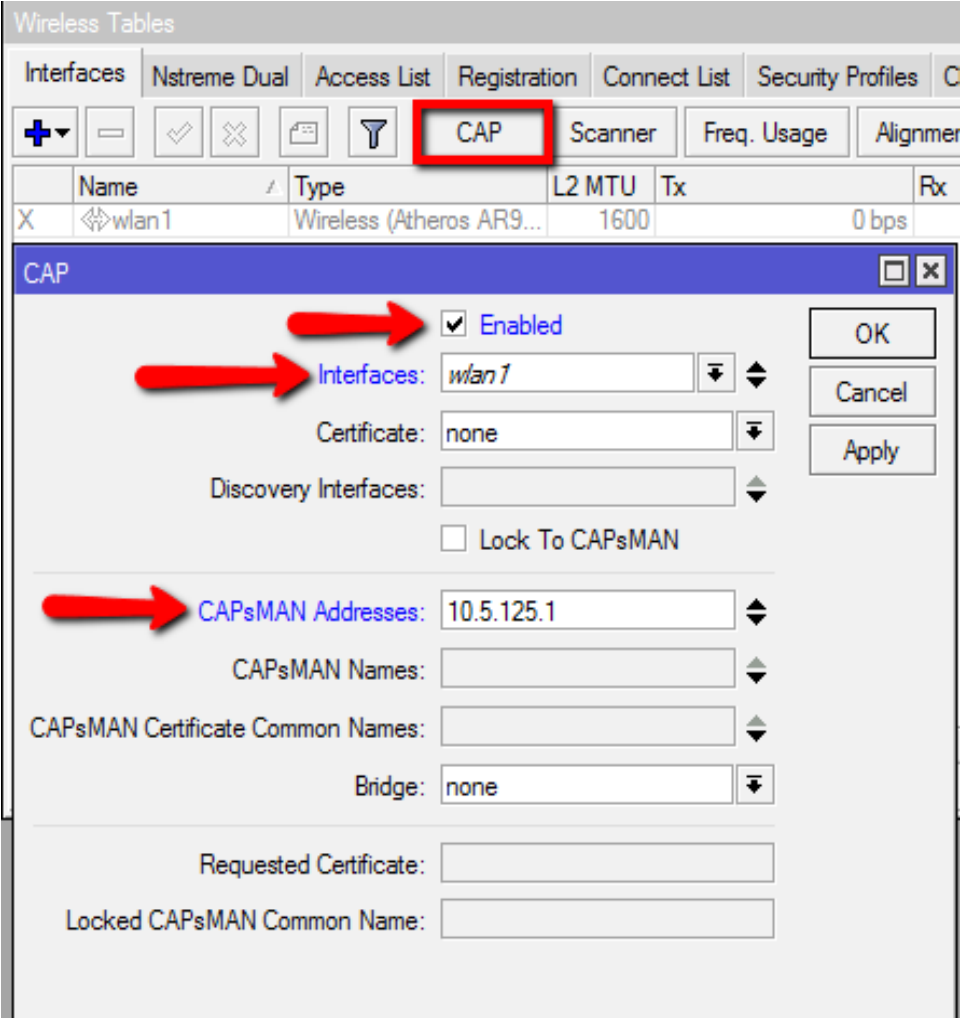
- Wireless Tab:** Name: OfficeNet, Mode: [empty], SSID: Office, Hide SSID: [empty], Load Balancing Group: [empty], Country: united states, Max Station Count: [empty], Multicast Helper: [empty], HT Tx Chains: [empty], HT Rx Chains: [empty], HT Guard Interval: [empty].
- Datapath Tab:** Datapath: [empty], Bridge: OfficeNet, Bridge Cost: [empty], Bridge Horizon: [empty], Local Forwarding: [empty], Client To Client Forwarding: [empty], VLAN Mode: [empty], VLAN ID: [empty].
- Security Tab:** Security: [empty], Authentication Type: WPA PSK, WPA2 PSK, WPA EAP, WPA2 EAP, Encryption: aes ccm, tkip, Group Encryption: aes ccm, Passphrase: OfficeNet, EAP Methods: [empty].

CAP to CAPsMAN IP Based Connection

IP (UDP) Layer3

- CAP communicates CAPsMAN using IP protocol
- ✓ Can traverse NAT when required
- Management connection between CAP and CAPsMAN is secured using DTLS
- CAP client data traffic is not secured
 - If encryption is required IPsec or encrypted tunnels can be used

Specify IP on The CAP



The screenshot shows the Mikrotik WinBox interface for configuring a CAP (Client Authentication Protocol) on a wireless interface. The 'CAP' tab is selected and highlighted with a red box. The configuration window is titled 'CAP' and contains the following fields:

- Enabled:** A checkbox that is checked, with a red arrow pointing to it.
- Interfaces:** A dropdown menu showing 'wlan1', with a red arrow pointing to it.
- Certificate:** A dropdown menu showing 'none'.
- Discovery Interfaces:** An empty dropdown menu.
- Lock To CAPsMAN:** An unchecked checkbox.
- CAPsMAN Addresses:** A text field containing '10.5.125.1', with a red arrow pointing to it.
- CAPsMAN Names:** An empty text field.
- CAPsMAN Certificate Common Names:** An empty text field.
- Bridge:** A dropdown menu showing 'none'.
- Requested Certificate:** An empty text field.
- Locked CAPsMAN Common Name:** An empty text field.

Buttons for 'OK', 'Cancel', and 'Apply' are visible on the right side of the window.

CAPsMAN and CAP in one board

- Does your CAPsMAN router has a wireless interface too?
- ✓ Enable CAP & Connect it to it self (127.0.0.1) for central management



Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List Sec

+ - ✓ ✗ [CAP] Scanner Freq. Usa

Name	Type	L2 MTU	Tx
CAP			
		<input checked="" type="checkbox"/> Enabled	
Interfaces:	wlan7		
Certificate:	none		
Discovery Interfaces:			
		<input type="checkbox"/> Lock To CAPsMAN	
CAPsMAN Addresses:	127.0.0.1		
CAPsMAN Names:			
CAPsMAN Certificate Common Names:			
Bridge:	none		
Requested Certificate:			
Locked CAPsMAN Common Name:			

CAPsMAN Simple Setup

- Add new Provisioning rule

The screenshot shows the CAPsMAN interface with the 'Provisioning' tab selected. A red box highlights the 'Provisioning' tab and the '+' icon in the toolbar. Below the toolbar, a table header is visible with columns: #, Radio MAC, Action, Master Configurati..., and Slave C. A dialog box titled 'New CAPs Provisioning' is open, containing the following fields and buttons:

#	Radio MAC	Action	Master Configurati...	Slave C
	00:00:00:00:00:00	create dynamic enabled	OfficeNet	

Dialog box fields and buttons:

- Radio MAC: 00:00:00:00:00:00
- Action: create dynamic enabled
- Master Configuration: OfficeNet
- Slave Configuration: (empty)
- Name Prefix: OfficeAP
- Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove

enabled

CAPsMAN Simple Setup

- Check the “Interface” status on:

CAPsMAN

The screenshot shows the CAPsMAN configuration interface. The 'Interfaces' tab is selected, and the 'OfficeAP1' interface is highlighted. The interface is currently in a 'running-ap' state. The configuration details for the interface are as follows:

Name	Type	MTU	L2 MTU
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

The screenshot shows the Wireless Tables configuration interface. The 'Interfaces' tab is selected, and the 'wlan1' interface is highlighted. The interface is currently in a 'running-ap' state. The configuration details for the interface are as follows:

Name	Type	L2 MTU	Tx
wlan1	Wireless (Atheros AR9...	1600	

--- managed by CAPsMAN
--- channel: 2427/20-Ce/gn(30dBm), SSID: Office, CAPsMAN forwarding

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: OfficeAP3

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

Tx Rate: 65Mbps-20MHz/1S

Rx Rate: 65Mbps-20MHz/1S

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

Tx Signal: 0

Rx Signal: -44

Uptime: 00:03:17.70

Tx/Rx Packets: 31 395/33 212

Tx/Rx Bytes: 29.8 MiB/29.5 MiB

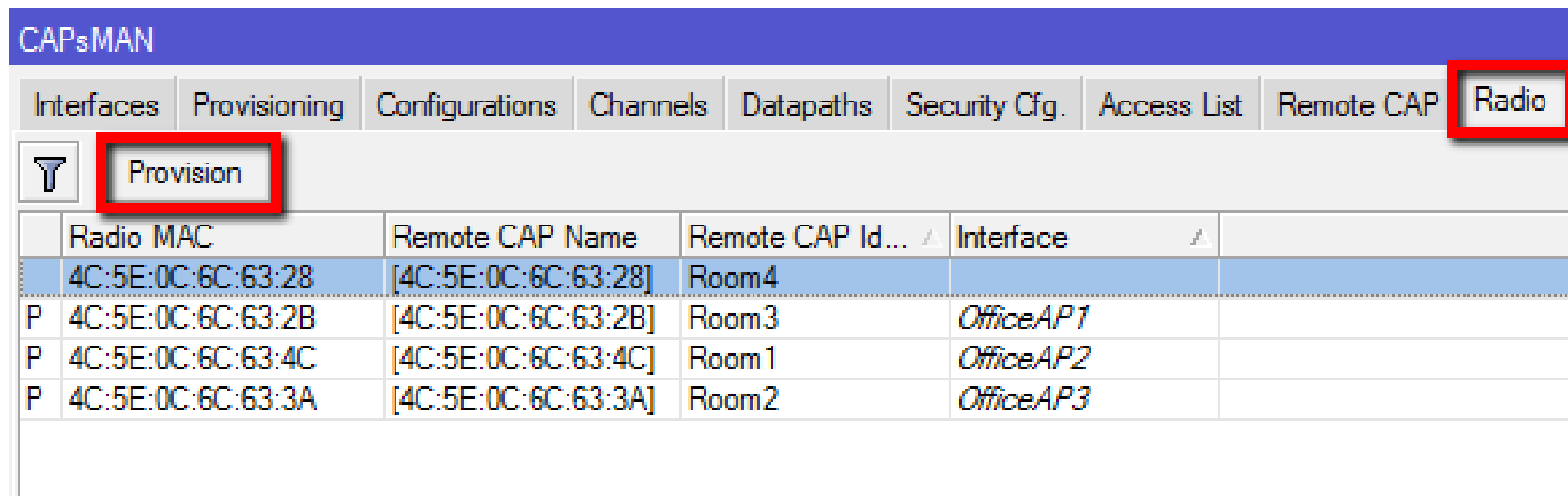
OK

Remove

Copy to Access List

Manual Provisioning

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

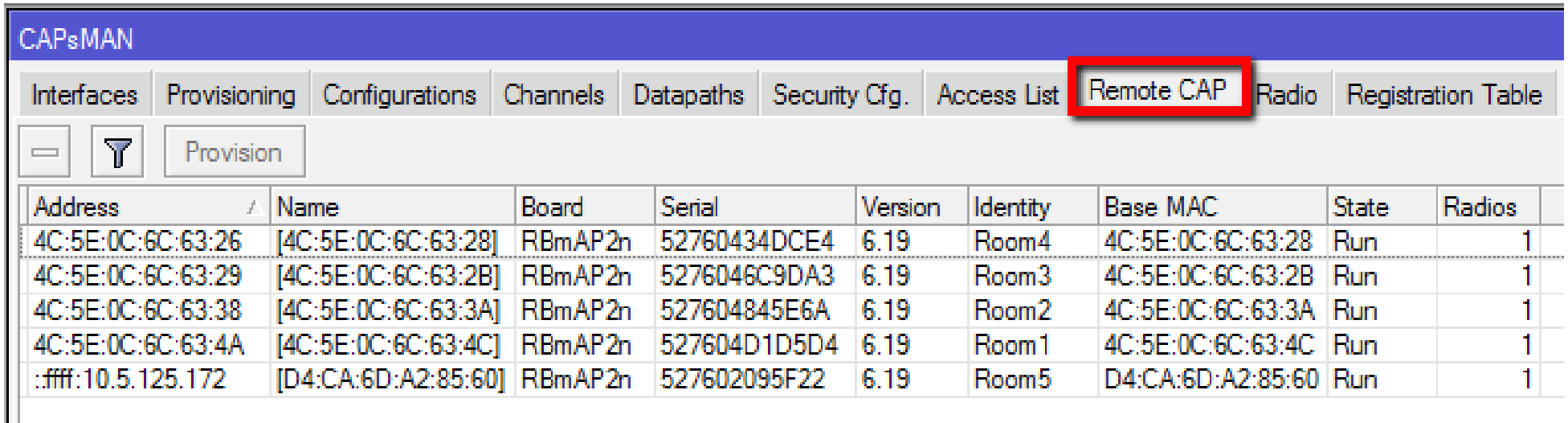


The screenshot shows the CAPsMAN web interface. The 'Radio' tab is selected and highlighted with a red box. Below the navigation tabs, the 'Provision' button is also highlighted with a red box. The main content area displays a table with the following data:

	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
- RouterBoard model
- Serial Number of the Board
- RouterOS version
- System Identity
- Main wireless MAC
- State of the CAP
- Radio count

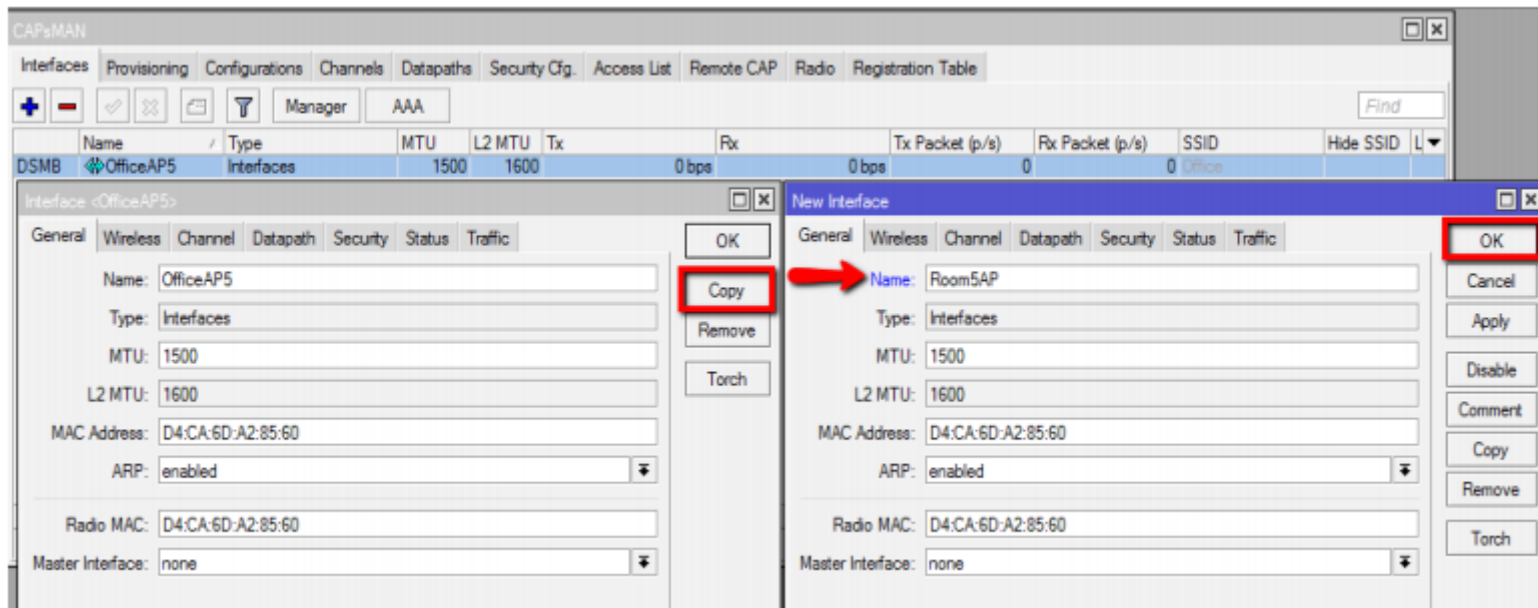


The screenshot shows the Mikrotik CAPsMAN web interface. The 'Remote CAP' tab is selected and highlighted with a red box. Below the navigation tabs, there are buttons for 'Provision' and a filter icon. The main content area displays a table with the following columns: Address, Name, Board, Serial, Version, Identity, Base MAC, State, and Radios. The table contains five rows of data representing different CAPs.

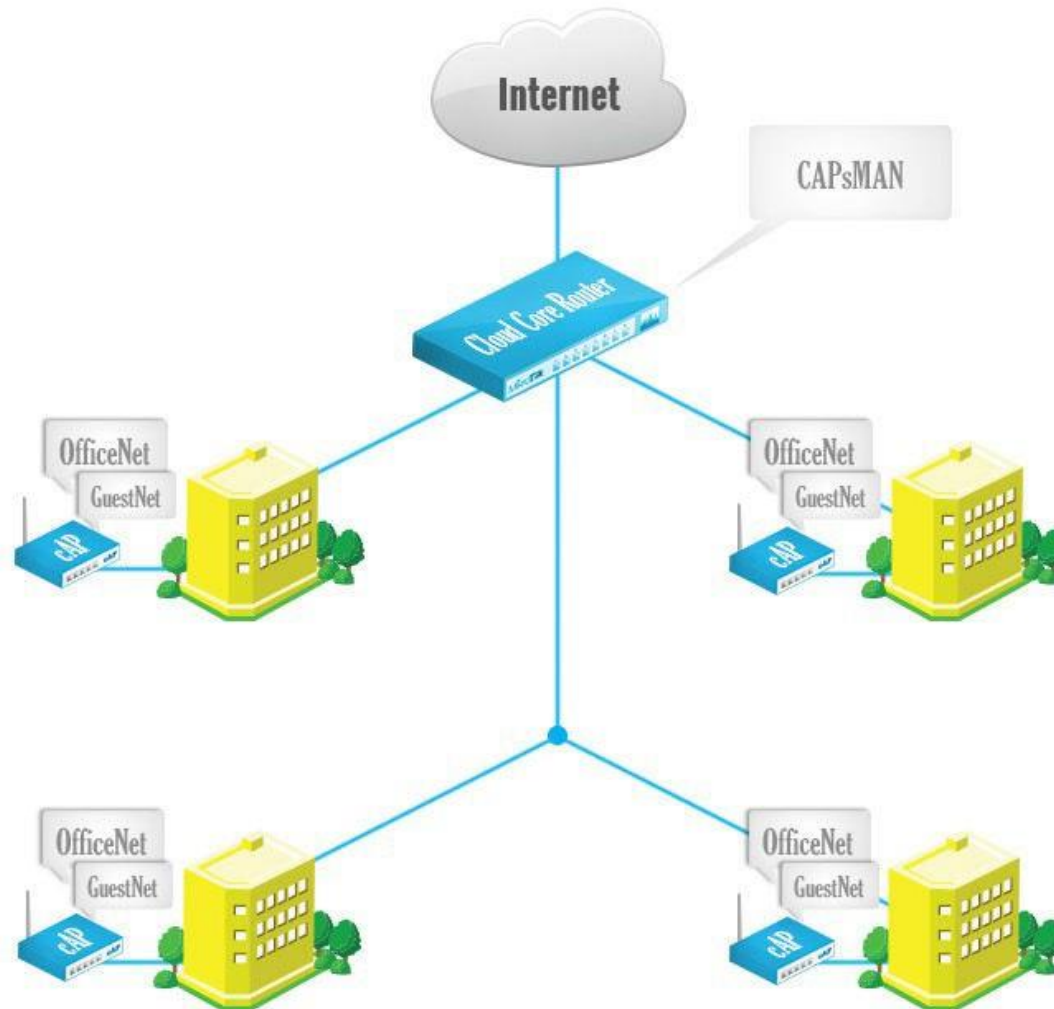
Address	Name	Board	Serial	Version	Identity	Base MAC	State	Radios
4C:5E:0C:6C:63:26	[4C:5E:0C:6C:63:28]	RBmAP2n	52760434DCE4	6.19	Room4	4C:5E:0C:6C:63:28	Run	1
4C:5E:0C:6C:63:29	[4C:5E:0C:6C:63:2B]	RBmAP2n	5276046C9DA3	6.19	Room3	4C:5E:0C:6C:63:2B	Run	1
4C:5E:0C:6C:63:38	[4C:5E:0C:6C:63:3A]	RBmAP2n	527604845E6A	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 static CAP interface

- Interface name or setting does not change after a reboot
- Additional manual setting override
- Copy dynamic interface to make static interface



CAPsMAN Virtual AP



CAPsMAN VirtualAP Configuration

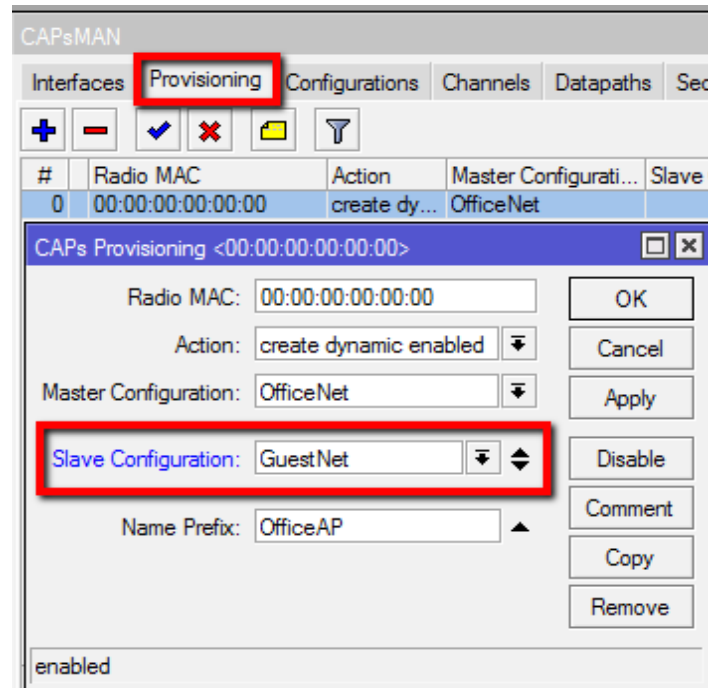
- Create new Bridge interface and IP configuration for the VirtualAP
 - Or use the same bridge interface used for Master AP
- Create a new configuration for the VirtualAP
- Specify the new configuration in Provisioning rule as Slave Configuration
- Remove all CAP interfaces
- Initiate Manual Provisioning on all the CAPs

CAPsMAN VirtualAP Setup

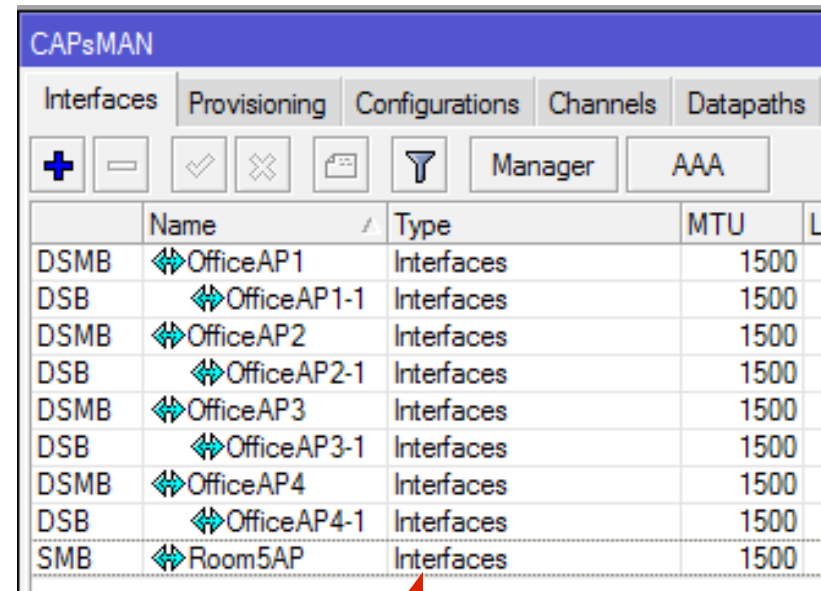
The screenshot displays the CAPsMAN web interface. At the top, the 'Configurations' tab is highlighted with a red box. Below the navigation bar, a table lists existing configurations, with a '+' icon in a red box to the left. Two configuration panels are shown below:

- Left Panel (New CAPs Configuration):** The 'Wireless' tab is highlighted with a red box. Fields include: Name: GuestNet, Mode: (empty), SSID: Guest, Hide SSID: (empty), Load Balancing Group: (empty), Country: (empty), Max Station Count: (empty), Multicast Helper: (empty), HT Tx Chains: (empty), HT Rx Chains: (empty), and HT Guard Interval: (empty).
- Right Panel (New CAPs Configuration):** The 'Datapath' tab is highlighted with a red box. Fields include: Datapath: (dropdown), Bridge: GuestNet, Bridge Cost: (dropdown), Bridge Horizon: (dropdown), Local Forwarding: (dropdown), Client To Client Forwarding: (dropdown), VLAN Mode: (dropdown), and VLAN ID: (dropdown).

CAPsMAN VirtualAP Setup

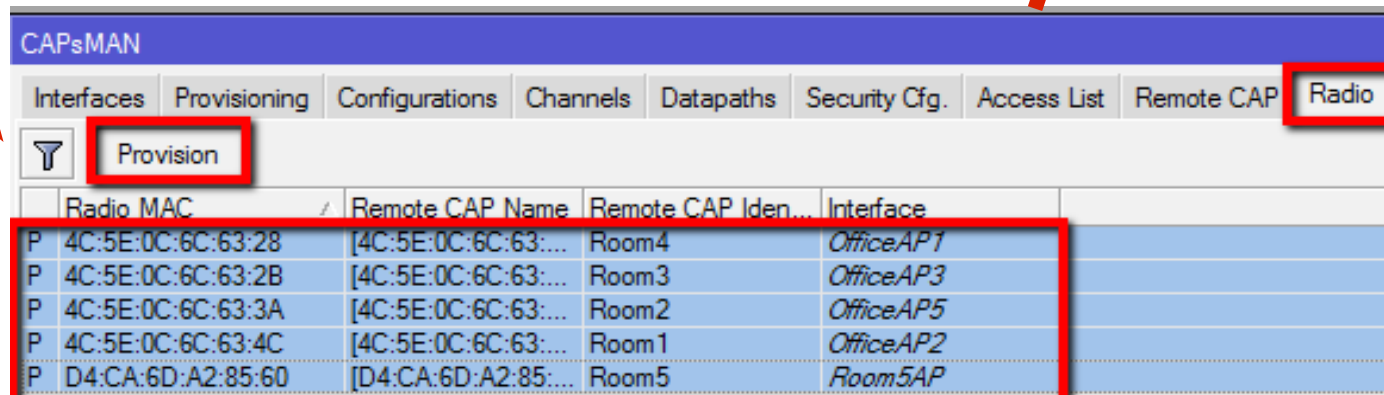


The screenshot shows the CAPsMAN Provisioning dialog box. The 'Provisioning' tab is selected. The 'Slave Configuration' dropdown menu is highlighted with a red box and set to 'GuestNet'. Other fields include 'Radio MAC' (00:00:00:00:00:00), 'Action' (create dynamic enabled), 'Master Configuration' (OfficeNet), and 'Name Prefix' (OfficeAP). Buttons for OK, Cancel, Apply, Disable, Comment, Copy, and Remove are visible.



The screenshot shows the CAPsMAN Interfaces list. The 'Provisioning' tab is selected. The list contains the following entries:

Name	Type	MTU
DSMB OfficeAP1	Interfaces	1500
DSB OfficeAP1-1	Interfaces	1500
DSMB OfficeAP2	Interfaces	1500
DSB OfficeAP2-1	Interfaces	1500
DSMB OfficeAP3	Interfaces	1500
DSB OfficeAP3-1	Interfaces	1500
DSMB OfficeAP4	Interfaces	1500
DSB OfficeAP4-1	Interfaces	1500
SMB Room5AP	Interfaces	1500



The screenshot shows the CAPsMAN Radio list. The 'Radio' tab is selected. The 'Provision' button is highlighted with a red box. The list contains the following entries:

Radio MAC	Remote CAP Name	Remote CAP Iden...	Interface
P 4C:5E:0C:6C:63:28	[4C:5E:0C:6C:63:...	Room4	OfficeAP1
P 4C:5E:0C:6C:63:2B	[4C:5E:0C:6C:63:...	Room3	OfficeAP3
P 4C:5E:0C:6C:63:3A	[4C:5E:0C:6C:63:...	Room2	OfficeAP5
P 4C:5E:0C:6C:63:4C	[4C:5E:0C:6C:63:...	Room1	OfficeAP2
P D4:CA:6D:A2:85:60	[D4:CA:6D:A2:85:...	Room5	Room5AP

CAPsMAN static VirtualAP

The screenshot displays the CAPsMAN configuration interface. At the top, there are tabs for various configuration areas: Interfaces, Provisioning, Configurations, Channels, Datapaths, Security Cfg., Access List, Remote CAP, Radio, and Registration Table. Below the tabs is a toolbar with a red box highlighting a plus sign icon. A table lists existing interfaces, with the last row, 'SMB Room5AP', highlighted in blue. Below the table, two 'New Interface' configuration windows are shown. The left window has the 'General' tab selected (highlighted with a red box), showing fields for Name (Room5VAP), Type (Interfaces), MTU (1500), L2 MTU, MAC Address (00:00:00:00:00:00), ARP (enabled), Radio MAC (00:00:00:00:00:00), and Master Interface (Room5AP). The right window has the 'Wireless' tab selected (highlighted with a red box), showing fields for Configuration (GuestNet), Mode, SSID (GuestAP), Hide SSID, Load Balancing Group, Country, and Max Station Count. A vertical toolbar on the right side of the right window contains buttons for OK, Cancel, Apply, Disable, Comment, Copy, Remove, and Torch.

Name	Type	MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)
DSMB OfficeAP1	Interfaces	1500	1600		0 bps	0 bps	0
DSB OfficeAP1-1	Interfaces	1500	1600		0 bps	0 bps	0
DSMB OfficeAP2	Interfaces	1500	1600		0 bps	0 bps	0
DSB OfficeAP2-1	Interfaces	1500	1600		0 bps	0 bps	0
DSMB OfficeAP3	Interfaces	1500	1600		0 bps	0 bps	0
DSB OfficeAP3-1	Interfaces	1500	1600		0 bps	0 bps	0
DSMB OfficeAP4	Interfaces	1500	1600		0 bps	0 bps	0
DSB OfficeAP4-1	Interfaces	1500	1600		0 bps	0 bps	0
SMB Room5AP	Interfaces	1500	1600		0 bps	0 bps	0

CAPsMAN Access List Features

- MAC Authentication
- Radius Query support
- MAC Mask support
- Signal Range
- Time
- Private Passphrase
- VLAN ID assignment


CAPsMAN Access List

- Allow Apple devices to connect
- Let RADIUS server decide for the rest of devices

The screenshot displays the CAPsMAN configuration interface. The 'Access List' tab is selected and highlighted with a red box. A red box also highlights the '+' icon in the toolbar. Two 'New CAPs Access Rule' dialog boxes are open, side-by-side. The left dialog box shows a rule configuration with the following fields: MAC Address (18:34:51:00:00:00), MAC Mask (FF:FF:FF:00:00:00), Interface (empty), Signal Range (empty), Action (accept), and various other options like AP Tx Limit, Client Tx Limit, Private Passphrase, Client To Client Forwarding, RADIUS Accounting, VLAN Mode, and VLAN ID. The right dialog box shows a similar configuration but with the Action set to 'query radius'. Both dialog boxes have 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', 'Copy', and 'Remove' buttons. The status 'enabled' is shown at the bottom of each dialog box.

CAPsMAN Configuration override

- Configuration overrides Channel setting
- Interface overrides Channel and Configuration setting

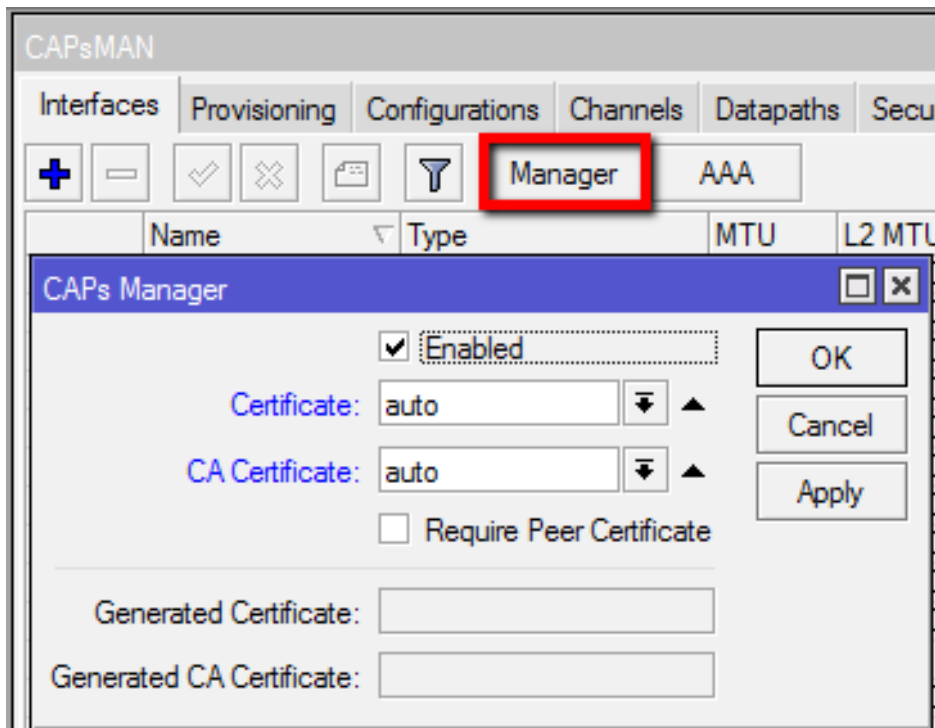


The image displays three overlapping configuration windows in a network management interface, illustrating the override process:

- New CAPs Channel:** Shows a channel named 'channel1' with a frequency of 2412 MHz. Buttons for 'OK', 'Cancel', and 'Apply' are visible.
- New CAPs Configuration:** Shows the 'Channel' tab selected. The channel is set to 'channel1' and the frequency is 2437 MHz.
- New Interface:** Shows the 'Channel' tab selected. The channel is set to 'channel1' and the frequency is 2462 MHz.
- Interface <cap1>:** Shows the 'Channel' tab selected. The 'Current Channel' is 2462/20-eC/gn(30dBm), and the 'Current Rate Set' is CCK:1-11 OFDM:6-54 BW:1x-2x HT:0-7.

CAPsMAN Auto Certificate

- Enable Certificate and CA Certificate on CAPsMAN

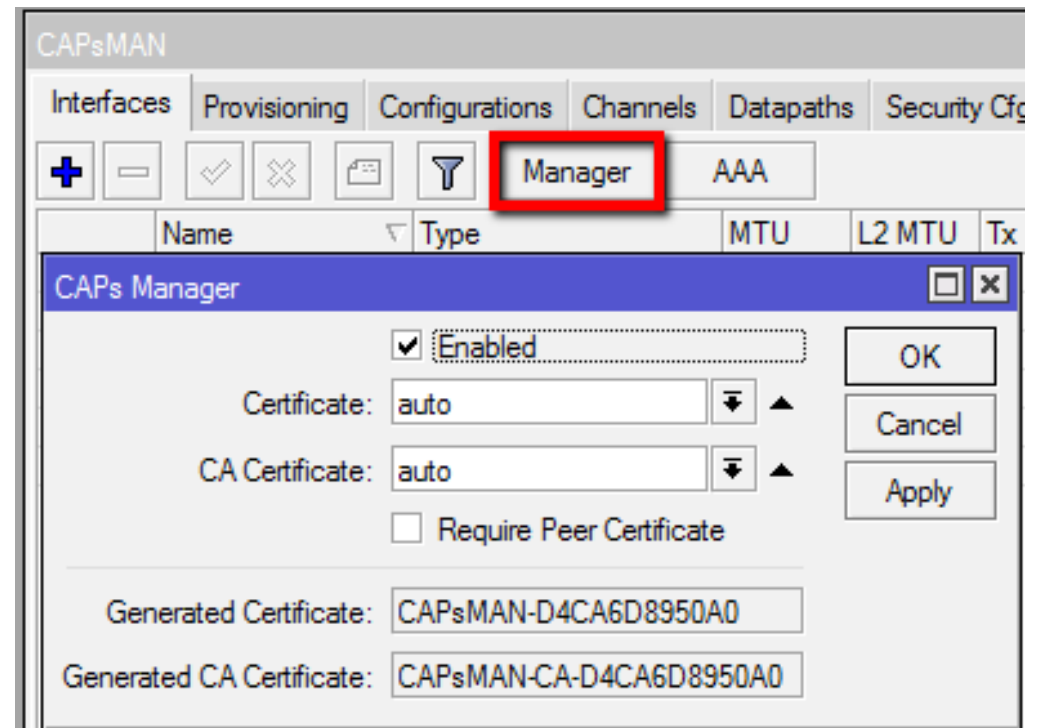


CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security

+ - [check] [x] [filter] **Manager** AAA

Name	Type	MTU	L2 MTU
CAPs Manager			
<input checked="" type="checkbox"/> Enabled			
Certificate:	auto		
CA Certificate:	auto		
<input type="checkbox"/> Require Peer Certificate			
Generated Certificate:			
Generated CA Certificate:			



CAPsMAN

Interfaces Provisioning Configurations Channels Datapaths Security Cfg

+ - [check] [x] [filter] **Manager** AAA

Name	Type	MTU	L2 MTU	Tx
CAPs Manager				
<input checked="" type="checkbox"/> Enabled				
Certificate:	auto			
CA Certificate:	auto			
<input type="checkbox"/> Require Peer Certificate				
Generated Certificate:	CAPsMAN-D4CA6D8950A0			
Generated CA Certificate:	CAPsMAN-CA-D4CA6D8950A0			

CAPsMAN Auto Certificate

- Enable “Request” Certificate on CAP

Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List Security Pr

+ - ✓ ✕ [CAP] Scanner Freq. Usage

Name	Type	L2 MTU	Tx
CAP			

CAP

Enabled

OK

Interfaces: wlan7

Cancel

Certificate: request

Apply

Discovery Interfaces: ether1

Lock To CAPsMAN

CAPsMAN Addresses:

CAPsMAN Names:

CAPsMAN Certificate Common Names:

Bridge: bridgeLocal

Requested Certificate:

Locked CAPsMAN Common Name:

Wireless Tables

Interfaces Nstreme Dual Access List Registration Connect List Security Pr

+ - ✓ ✕ [CAP] Scanner Freq. Usage

Name	Type	L2 MTU	Tx
CAP			

CAP

Enabled

OK

Interfaces: wlan7

Cancel

Certificate: request

Apply

Discovery Interfaces: ether1

Lock To CAPsMAN

CAPsMAN Addresses:

CAPsMAN Names:

CAPsMAN Certificate Common Names:

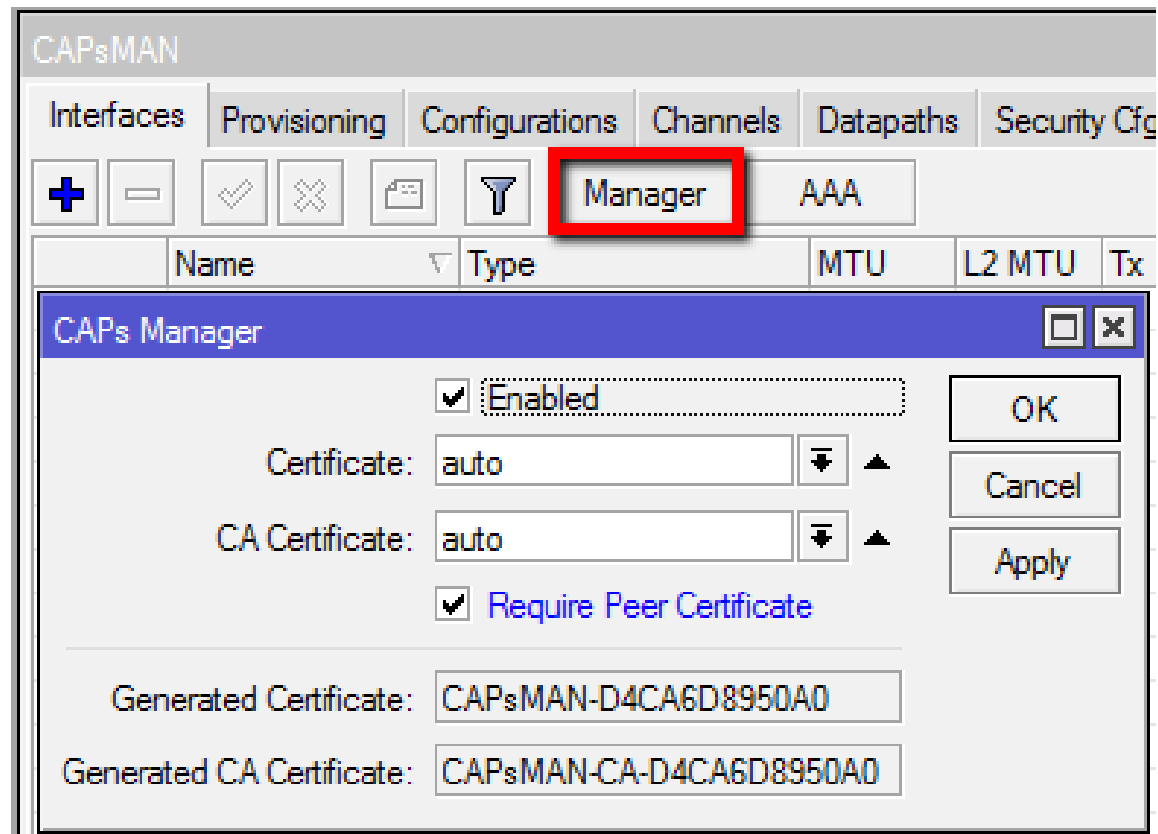
Bridge: bridgeLocal

Requested Certificate: CAP-4C5E0C6C634A

Locked CAPsMAN Common Name:

CAPsMAN Auto Certificate

- Accept connections only from CAPs with valid certificate



CAPsMAN Antenna Gain (Country Regulations)

- Antenna-gain value is taken from the CAP interface
- Must be configured on AP before you enable radio in CAP mode

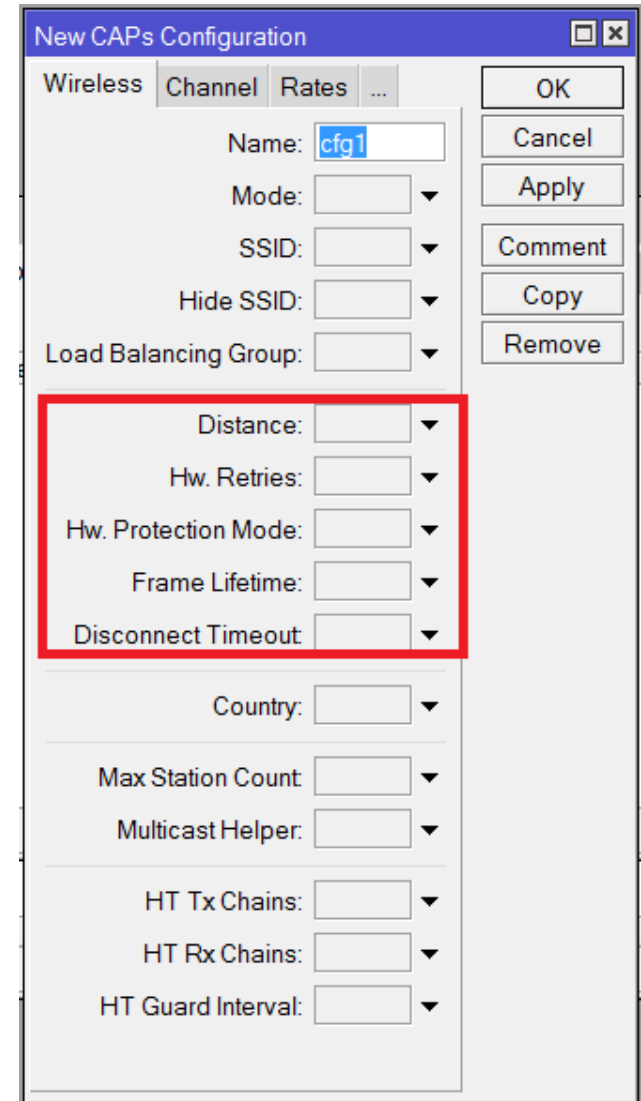
Example

- Antenna-gain: 6dBi
- EIRP: 30dB

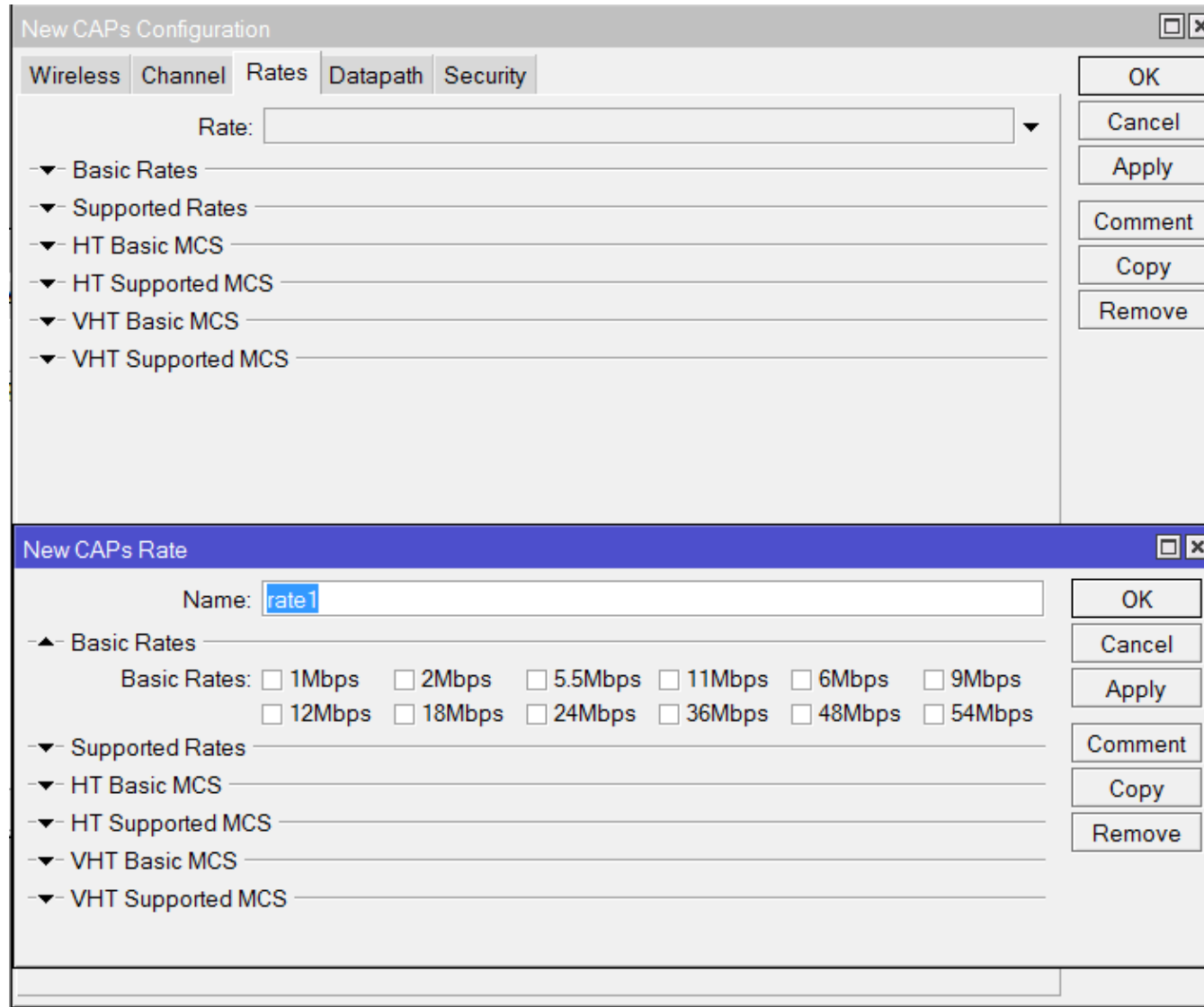
The screenshot displays the CAPsMAN configuration interface. The top section shows the 'Interfaces' tab with a table listing the interface 'cap1' under the 'MB' category. The table has columns for Name, Type, MTU, L2 MTU, and Tx. Below this, the 'Wireless Tables' section is visible, showing a table with columns for Name, Type, L2 MTU, Tx, and Rx. A red box highlights the text: '--- managed by CAPsMAN' and '--- channel: 2442/20-Ce/gn(24dBm), SSID: LocalAP, CAPsMAN forwarding'. The bottom section shows the 'Interface <cap1>' configuration, with tabs for General, Wireless, Channel, Datapath, Security, Status, and Traffic. The 'Wireless' tab is selected, and a red box highlights the 'Current Channel' field, which is set to '2442/20-Ce/gn(30dBm)'. Other fields include 'Current State: running-ap', 'Current Rate Set: CCK:1-11 OFDM:6-54 BW:1x-2x HT:0-15', and 'Current Basic Rate Set: OFDM:6 BW:1x HT:0-7'.

CAPsMAN Latest version new features in configuration - wireless

- 16th October 2014 i have advised MikroTik to include **wireless tuning parameters** also in CAPsMAN:
 - Configurable Basic and Supported Data-Rates
 - hw-retries,
 - disconnect-timeout
 - rts/cts
 - Etc..
- ✓ As of 17th October(In Middle East MUM 2016 I had realized that everything was there)! 😊 Thanks!
 - Full CAPs control

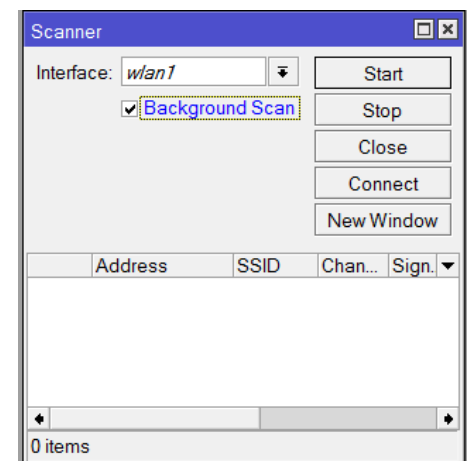
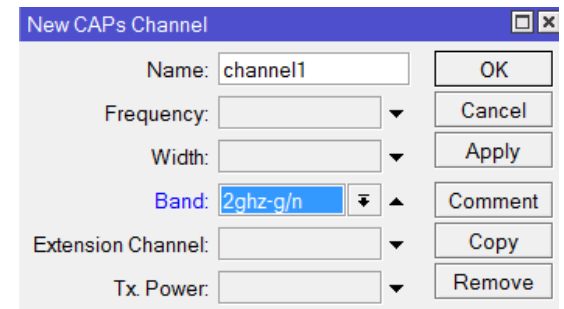
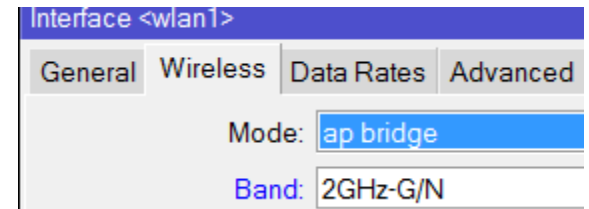


CAPsMAN Latest version new features in configuration - RATES



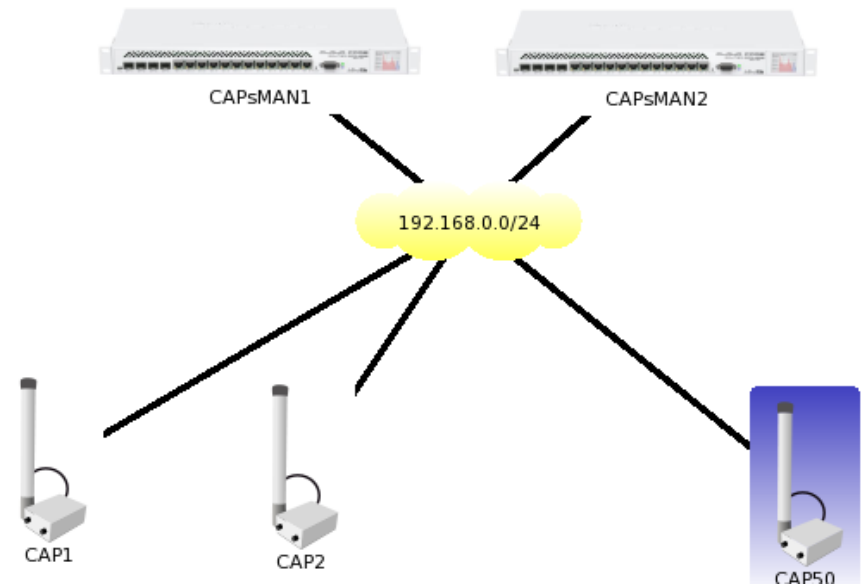
Wireless-rep package – Other new features useful for CAPsMAN

- Regular Wireless Interface and CAPsMAN support '2ghz-g/n' band setting
 - basic-rates – 6-54Mbps
 - supported – 6-54Mbps
 - ht-basic-mcs – None
 - ht-supported-mcs – 0-23
- Background scan
 - Not included in CAPsMAN but it can be used on CAPs



Maintain a failover controller (CAPsMAN)

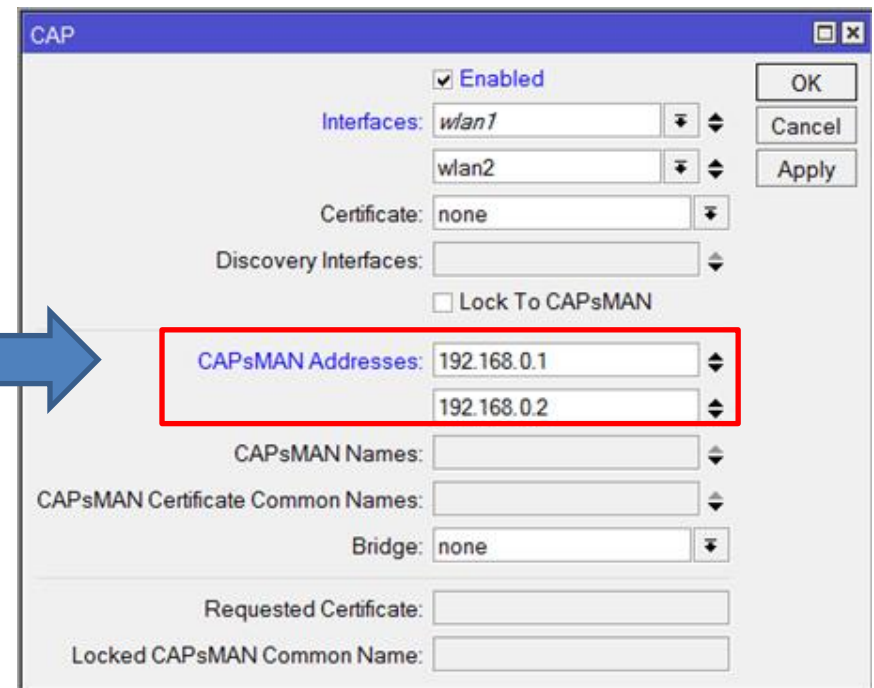
- In big networks you have
 - Many CAPs
 - Many active users
- Most times your customer will require redundancy
 - A bad power supply can take down whole network



Maintain a failover controller (CAPsMAN)

- Its possible to create the same configuration on a second or maybe third router to act as a backup CAPsMAN

➤ Just configure multiple CAPsMAN addresses on **every** CAP



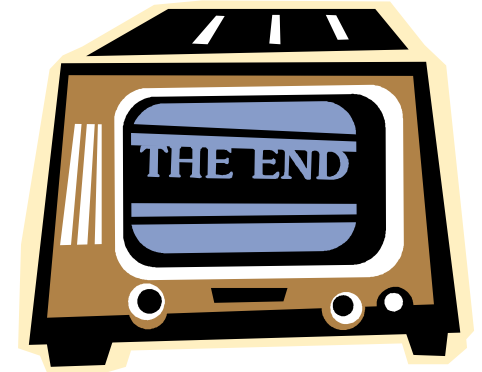
The screenshot shows a configuration window titled "CAP" with the following fields and values:

- Enabled
- Interfaces: wlan1, wlan2
- Certificate: none
- Discovery Interfaces: (empty)
- Lock To CAPsMAN
- CAPsMAN Addresses: 192.168.0.1, 192.168.0.2** (highlighted with a red box)
- CAPsMAN Names: (empty)
- CAPsMAN Certificate Common Names: (empty)
- Bridge: none
- Requested Certificate: (empty)
- Locked CAPsMAN Common Name: (empty)

Buttons: OK, Cancel, Apply

Comments? Questions?

Thank You!
Enjoy the Rest of the MUM



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- Consultancy & Solutions for New or Existing ISP/WISP
- Telephony-VoIP Solutions (Wholesale or Retail/CallingCard)
- A custom Network/Telecom service or solution
- Long term cooperation for your projects

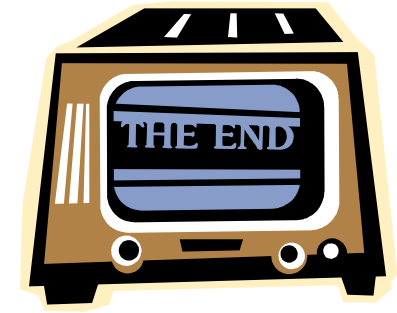
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More Comments? Questions?



Thank You!

Enjoy the Rest of the MUM

Do you like MikroTik? Need to know more?

**...Need to organize a Training at your Place?
Different Dates? Private Trainings for your company?**

Just Contact me 😊

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