



WISP / Industrial/ Residential, Marinas Deployment, Using MikroTik CapsMan With Best Features

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About Me

- **Name:**

- **Shakeel Khan**

- **Education:**

Bachelors In Engineering

- **Position:**

Technical Product Manager

- **Trainings:**

- ▶ Only Mikrotik Trainer & Consultant In Pakistan From **USA**
- ▶ MTCNA (MikroTik Certified Network Associate)
- ▶ MTCWE (MikroTik Certified Wireless Engineer)
- ▶ MTCTCE (MikroTik Certified Traffic Control Engineer)
- ▶ UBWS (Ubiquiti Broadband Wireless Specialist)
- ▶ UBWA V2 (Ubiquiti Broadband Wireless Admin)
- ▶ UBWE (Ubiquiti Enterprise Wireless Admin Ubiquiti Broadband Wireless Admin)
- ▶ VoIP YEASTAR

About Company

- ▶ Started in 2003
- ▶ Top Wireless/Security & Network Equipment Distributor in Pakistan.
- ▶ We are Master Distributor for:

 MikroTik

 TOTO LINK
The Smartest Network Device

 Yeastar

 GRANDSTREAM
CONNECTING THE WORLD

 UBIQUITI[®]
NETWORKS

We Deals in:

- ▶ IT Managed Services
- ▶ E & I Managed Services
- ▶ Training & Consultancy
- ▶ M2M Solutions
- ▶ Security Solutions
- ▶ Electrical & Instrumentation Solutions with SCADA

Presentation Objectives

- ▶ Best Possible Understanding Of Centralized Management System WIFI Hotspots
- ▶ Modes of Wireless Networks
- ▶ Applications of Wireless Networks
- ▶ Centralized Management
- ▶ Mikrotik's CAPsMAN & its Deployment
- ▶ Questions & Answers

Modes Of Wireless Networks

PTP (Point to Point):

- ▶ Required for long distance links
- ▶ High throughput (BACKHUAL PURPOSE)

PTMP (Point to Multi Point):

- ▶ Mostly in WISP's (One To Many)
- ▶ Shared link with multiple users
- ▶ Cheap compared to point to point

Centralized Managed Wireless Network (Enterprise Hotspots)

- ▶ To provide wireless coverage for the roaming/fixed stations
- ▶ Highly managed

Advantage & Disadvantage of Wireless Networks

Advantages:

- ▶ Required minimum time for installation
- ▶ Low cost
- ▶ High availability

Disadvantages / Limitations:

- ▶ Bandwidth limitations
- ▶ Regulatory limitations (Where Applicable)

Mostly Applications of Wireless Network

- ▶ Wireless ISPs
- ▶ Wireless CCTV
- ▶ Wireless VoIP
- ▶ Wireless Advertisements
- ▶ Wireless SCADA
- ▶ Wireless Data Networks

Why We Need Centralized Managed System ?

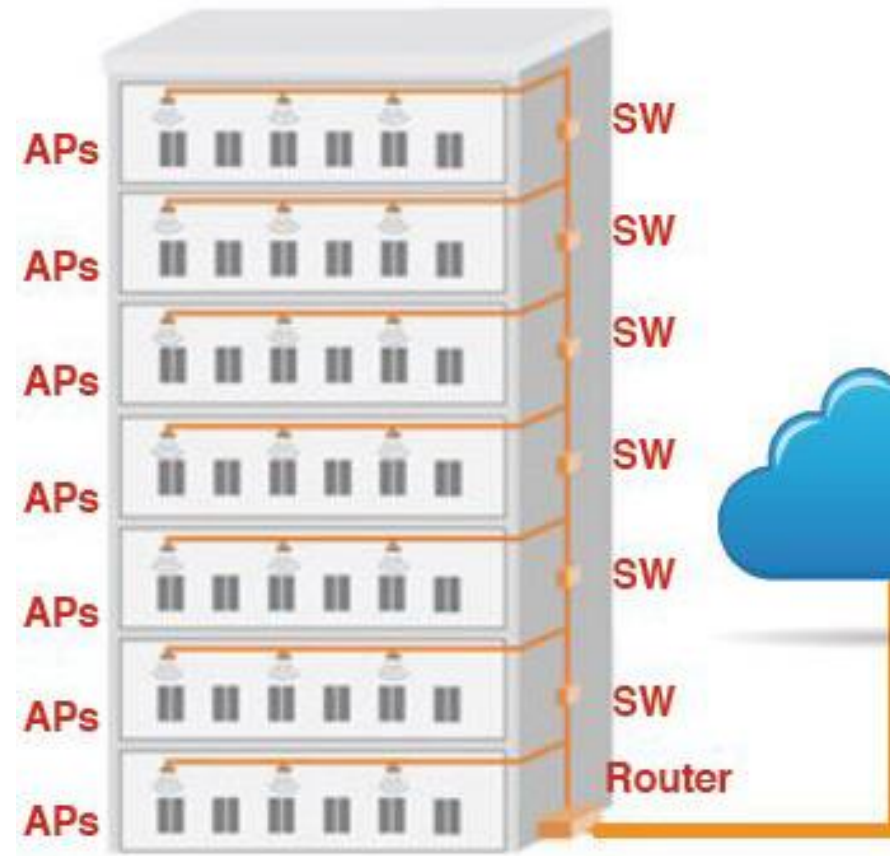
- ▶ For high availability of network
- ▶ One click management
- ▶ One windows statics of network

Applications:

- ▶ Hospitals
- ▶ Universities
- ▶ Industries
- ▶ Malls and cafe
- ▶ Homes / Apartments
- ▶ Ports and container terminals

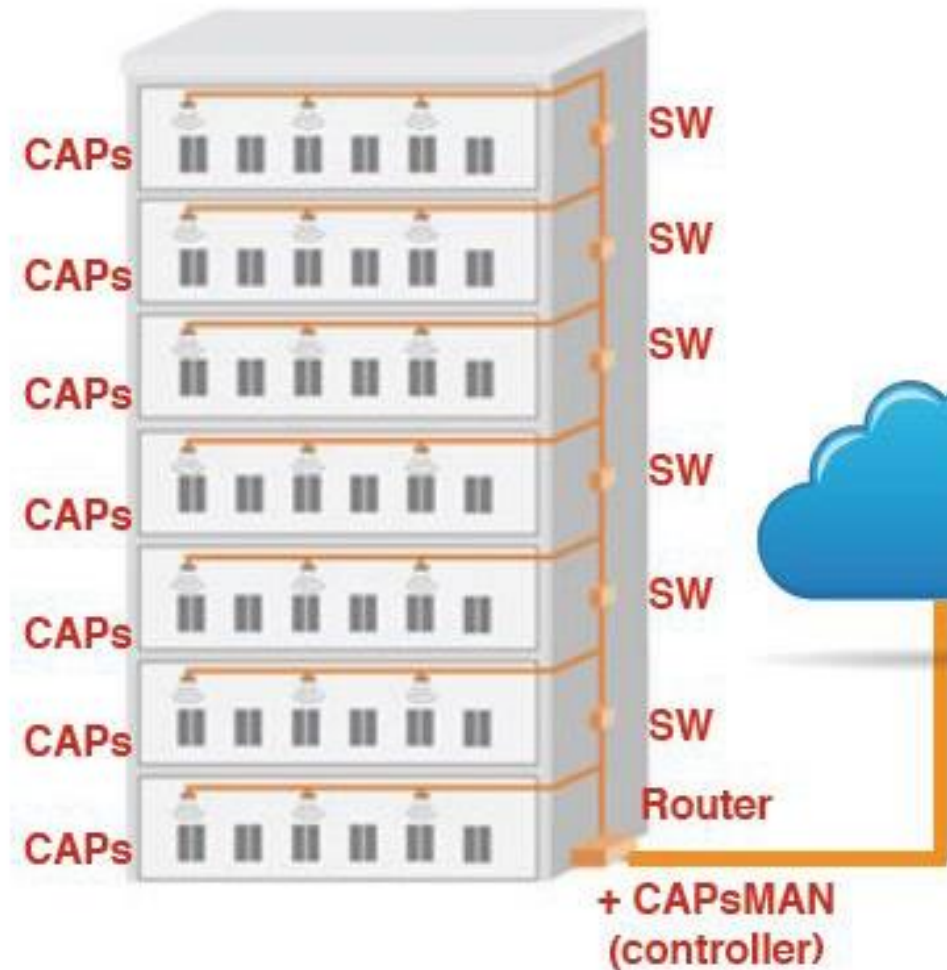
Conventional problems

- ▶ Conventionally, administering Wireless Access Point is done Individually one by one.
- ▶ Administrator has to make sure That the configurations are the Same for all APs like SSID, Security, Access List, Policy, etc.
- ▶ That needs more time and Manpower if we need to changes something for the enterprise WLAN Setups i.e Apartment As Shown.



Solution

- ▶ Using Mikrotik Capsman
It Shall Fix All conventional Problems.



Solution with MIKROTIK CAPsMAN (Success Story)



Reason to use MIKROTIK CAPsMAN

- ▶ **Highly flexible**
- ▶ **Reliable**
- ▶ **No additional license required (Comes Free With Routerboard Hardware)**
- ▶ **Highly scalable**
- ▶ **CAP can be any MIKROTIK hardware with at least one wireless interface**
- ▶ **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**
- ▶ **Easy availability**
- ▶ **Low cost**

Component of CAPs Management System

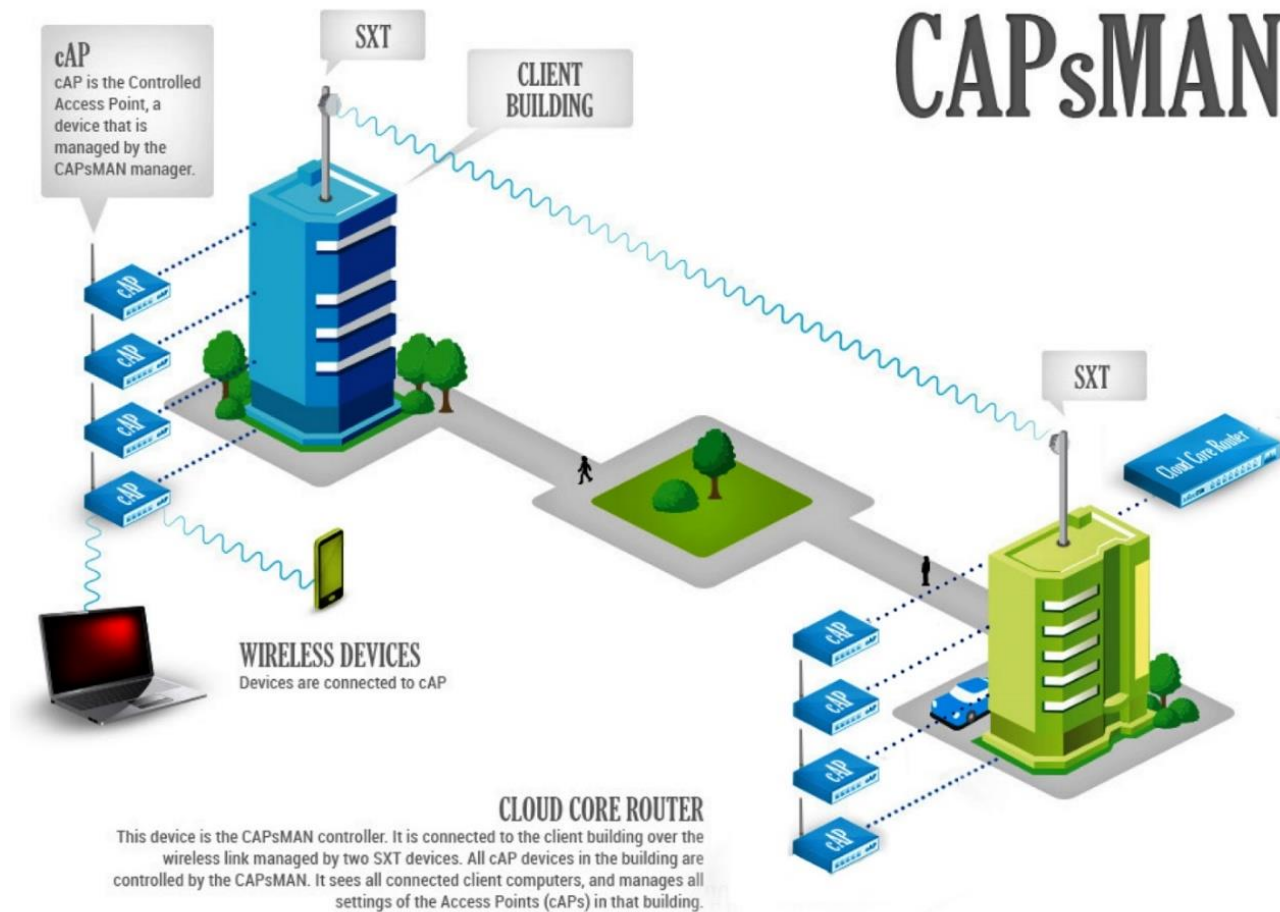
▶ **CAPsMAN**

- x86 or RouterBOARD based device
- Newest RouterOS version
- Wireless-cm2 package installed and enabled

▶ **CAP**

- X86 or RouterBOARD based device
- Newest RouterOS v6 version
- Atheros chipset (a/b/g/n/ac) wireless card
- Wireless-cm2 package installed and enabled
- At least Level4 RouterOS license

CAPsMAN Simple Setup



CAPsMAN v2 features

- ▶ CAPsMAN automatic upgrade of all CAP clients (configurable)
- ▶ Improved CAP<->CAPsMAN data connection protocol
- ▶ Added "Name Format" and "Name Prefix" setting for Provision rules
- ▶ Improved logging entries when client roams between the CAPs
- ▶ Added L2 Path MTU discovery

CAPsMAN v2 compatibility

- ▶ CAPsMAN v2 is NOT compatible with current CAPsMAN v1 (CAPsMAN v1 CAP devices will not be able to connect to CAPsMAN v2 and CAPsMAN v2 CAP devices will not be able to connect to CAPsMAN v1).
- ▶ Both CAPsMAN and CAP devices should have wireless-cm2 package installed in order to make CAPsMAN v2 system to work.

CAPsMAN/Cap Setup Step By Step

- ▶ **Enable CAPsMAN service**
- ▶ **Create Bridge interface**
- ▶ **Add IP configuration to Bridge interface**
- ▶ **Run DHCP Server with NAT**
- ▶ **Create CAPsMAN Configuration**
- ▶ **Create Provisioning rule**
- ▶ **Enable CAP mode on the Aps**
- ▶ **Efficient Roaming Configuration TIP**
- ▶ **Specific Brand Allow Only Without Authentication**

CAPsMAN Setup LAB

The screenshot displays the Mikrotik WinBox interface for CAPsMAN configuration. The window title is "admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)". The main menu includes Sessions, Settings, and Dashboard. The left sidebar shows various configuration options like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, LCD, MetaROUTER, Partition, and Make Supout.rif.

The main area shows the "Package List" table with the following data:

Name	Version	Build Time	Scheduled
routing	6.30.4	Aug/25/2015 12:59:46	
security	6.30.4	Aug/25/2015 12:59:46	
system	6.30.4	Aug/25/2015 12:59:46	
wireless-cm2	6.30.4	Aug/25/2015 12:59:46	
wireless-fp	6.30.4	Aug/25/2015 12:59:46	

The "wireless-cm2" package is highlighted with a red box. Below the table, the "CAPsMAN" configuration is shown, with the "Manager" tab selected. The "CAPs Manager" dialog box is open, showing the following configuration:

- Enabled:
- Certificate: auto
- CA Certificate: auto
- Require Peer Certificate:
- Generated Certificate: CAPsMAN-E48D8C0D8C06
- Generated CA Certificate: CAPsMAN-CA-E48D8C0D8C06
- Package Path: (empty)
- Upgrade Policy: none

Buttons for OK, Cancel, and Apply are visible on the right side of the dialog box.

CAPsMAN Setup LAB

admin@E4:8D:8C:0D:8C:0A (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)

Sessions Settings Dashboard

Safe Mode Session: E4:8D:8C:0D:8C:0A

Bridge Ports Filters NAT Hosts

Name	Type	MTU	Tx
R bridge1	Bridge	1598	

1

Address List

Address	Network	Interface
192.168.1.1/24	192.168.1.0	bridge1

2

DHCP Server

DHCP Networks Leases Options Option Sets Alerts

Name	Interface	Relay	Lease Time
dhcp1	bridge1		

3

Firewall

Filter Rules **NAT** Mangle Service Ports Connections Address Lists Layer7 Protocols

#	Action	Chain	Src. Address	Dst. Address	Proto...	Src. Port	Dst. Port	In. Inter...	Out. In
0	mas...	srcnat							

4

OS WinBox

New Terminal LCD MetaROUTER Partition Make Supout.tif

CAPsMAN Setup LAB

The screenshot displays the Mikrotik WinBox interface for CAPsMAN configuration. The title bar reads "admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)". The main menu includes "Sessions", "Settings", and "Dashboard". A "Safe Mode" indicator and "Session: 192.168.1.1" are visible. The left sidebar lists various system components: Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, and Radius. The main panel shows the CAPsMAN configuration tabs: Interfaces, Provisioning, Configurations, Channels, Datapaths, Security Cfg, Access List, Remote CAP, Radio, and Registration Table. The "Channels", "Datapaths", and "Security Cfg" tabs are highlighted with red boxes. Below the tabs, a table lists channel configurations with columns for Name, Frequency, Width, Band, Extension Channel, and Tx. Power. Three configuration windows are open: "CAPs Channel <channel1>", "CAPs Datapath Configuration <datapath1>", and "CAPs Security Configuration <LAB SECURITY>".

admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)

Sessions Settings Dashboard

Safe Mode Session: 192.168.1.1

CAPsMAN

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

Name	Frequency	Width	Band	Extension Channel	Tx. Power
channel1	2412 MHz	20 MHz	2ghz-b/g/n	disabled	

CAPs Channel <channel1>

Name: channel1 OK Cancel Apply Comment Copy Remove

Frequency: 2412 MHz

Width: 20 MHz

Band: 2ghz-b/g/n

Extension Channel: disabled

Tx. Power:

CAPs Datapath Configuration <datapath1>

Name: datapath1 OK Cancel Apply Comment Copy Remove

Bridge: bridge 1

Bridge Cost:

Bridge Horizon:

Local Forwarding:

Client To Client Forwarding:

VLAN Mode:

VLAN ID:

CAPs Security Configuration <LAB SECURITY>

Name: LAB SECURITY

Authentication Type: WPA PSK WPA2 P

Encryption: aes ccm tkip

Group Encryption: aes ccm

Passphrase: 987654321

EAP Methods:

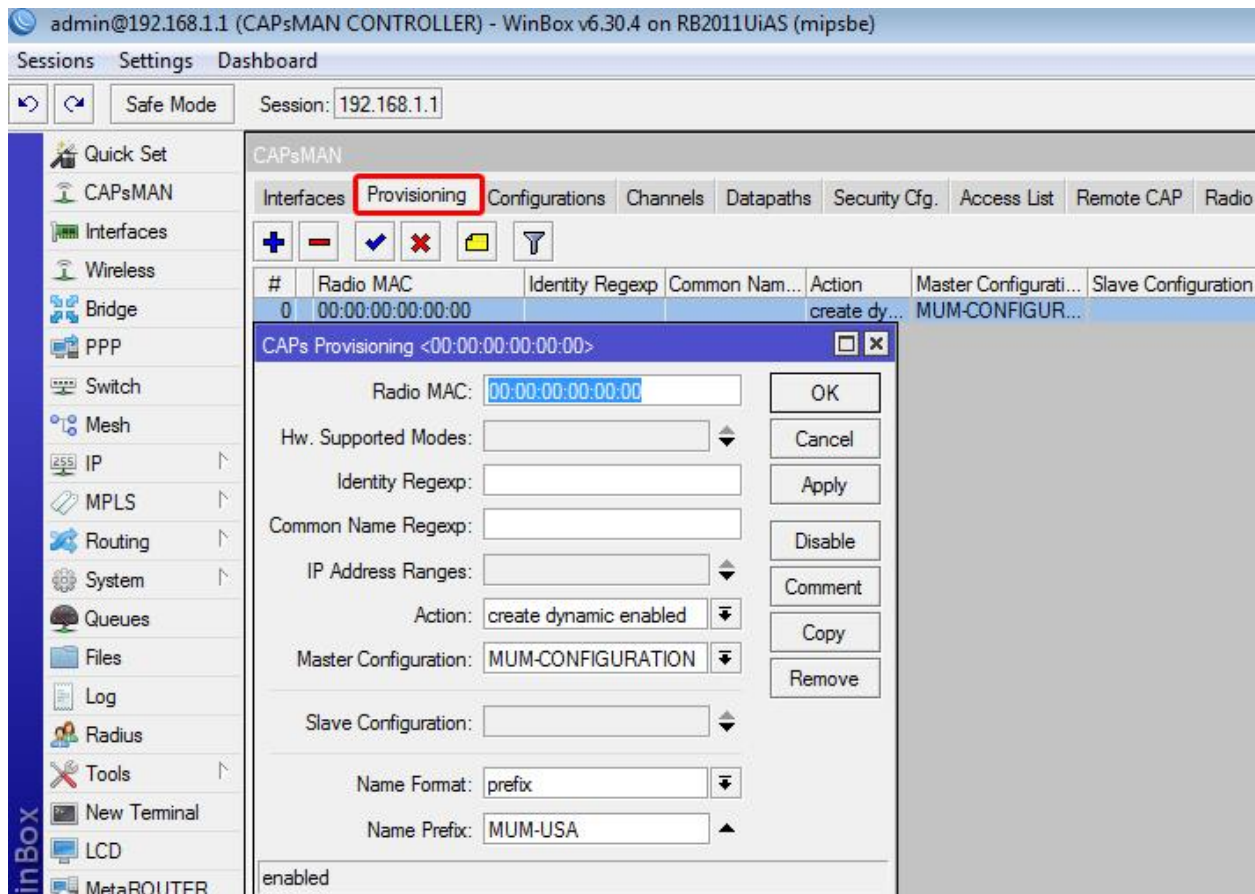
TLS Mode:

TLS Certificate:

CAPsMAN Setup LAB

The screenshot displays the WinBox interface for CAPsMAN configuration. The main window title is "admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)". The interface includes a sidebar with navigation options like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, LCD, MetaROUTER, Partition, and Make Supout.rif. The main area shows the "CAPsMAN" configuration menu with tabs for Interfaces, Provisioning, Configurations, Channels, Datapaths, Security Cfg., Access List, Remote CAP, Radio, and Registration Table. The "Configurations" tab is active, showing a "New CAPs Configuration" dialog with the following fields: Name: MUM-CONFIGURATION, Mode: ap, SSID: MUM-USA-2016, Country: pakistan, Max Station Count, Multicast Helper, HT Tx Chains, HT Rx Chains, and HT Guard Interval. Three sub-dialogs are open: "New CAPs Configuration" (Channel tab) with Channel: channel1, Frequency, Width, Band, Extension Channel, and Tx. Power; "New CAPs Configuration" (Datapath tab) with Datapath: datapath1, Bridge: bridge1, Bridge Cost, Bridge Horizon, Local Forwarding, Client Forwarding, VLAN Mode, and VLAN ID; and "New CAPs Configuration" (Security tab) with Security: LAB SECURITY, Authentication Type, and Encryption. Red boxes highlight the "Configurations", "Wireless", "Channel", "Datapath", and "Security" tabs in their respective windows.

CAPsMAN Setup LAB Complete



The screenshot shows the WinBox interface for a CAPsMAN controller. The title bar reads "admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)". The main menu includes "Sessions", "Settings", and "Dashboard". The "Session" is set to "192.168.1.1".

The left sidebar contains various configuration categories: Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, LCD, and MetaROUTER.

The main window is titled "CAPsMAN" and has several tabs: "Interfaces", "Provisioning" (highlighted with a red box), "Configurations", "Channels", "Datapaths", "Security Cfg.", "Access List", "Remote CAP", and "Radio".

Below the tabs is a table with the following columns: "#", "Radio MAC", "Identity Regexp", "Common Nam...", "Action", "Master Configurati...", and "Slave Configuration". The table contains one entry with the following values:

#	Radio MAC	Identity Regexp	Common Nam...	Action	Master Configurati...	Slave Configuration
0	00:00:00:00:00:00			create dy...	MUM-CONFIGUR...	

A dialog box titled "CAPs Provisioning <00:00:00:00:00:00>" is open, showing the following fields and options:

- Radio MAC: 00:00:00:00:00:00
- Hw. Supported Modes: [dropdown]
- Identity Regexp: [text box]
- Common Name Regexp: [text box]
- IP Address Ranges: [dropdown]
- Action: create dynamic enabled
- Master Configuration: MUM-CONFIGURATION
- Slave Configuration: [dropdown]
- Name Format: prefix
- Name Prefix: MUM-USA

Buttons on the right side of the dialog include: OK, Cancel, Apply, Disable, Comment, Copy, and Remove. The "enabled" checkbox is checked at the bottom of the dialog.

CAP to CAPsMAN Connection

- ▶ **MAC Layer2:**
 - No IP configuration required
 - CAP and CAPsMAN must be in the same Layer 2 network
- ▶ **IP (UDP) Layer3:**
 - CAP must reach the CAPsMAN using IP protocol
 - Can traverse NAT if necessary
- **Management connection between CAP and CAPsMAN is secured using DTLS.**
- **CAP client data traffic is not secured – if necessary additional encryption by using IPSec or encrypted tunnels is needed**

How Cap Selects CAPSMAN

- ▶ **CAP attempts to contact CAPsMAN and build available CAPsMAN list:**
 - List of CAPsMAN IPs,.
 - List of CAPsMAN IPs obtained from DHCP.
 - Broadcasting on configured interfaces using IP and MAC Layer.
- ▶ **CAP selects the CAPsMAN based on such rules:**
 - If CAPsMAN names setting is matched it will prefer that CAPsMAN earlier in the list
 - MAC layer connectivity to CAPsMAN is preferred over IP connectivity
 - If list is empty it will connect to any available CAPsMAN

CAP Configuration on AP LAB

The screenshot displays the WinBox configuration interface for a MikroTik device. The interface is divided into several panes:

- Bridge Pane (1):** Shows the configuration for a bridge named 'bridge1'. The 'Bridge' tab is selected, and the bridge is listed with Type 'Bridge', L2 MTU '1598', Tx '51.9 kbps', and Rx '51.9 kbps'.
- DHCP Client Pane (2):** Shows the configuration for a DHCP client on the 'ether1' interface. The 'DHCP Client' tab is selected, and the client is listed with 'Use P...' 'yes', 'Add D...' 'yes', 'IP Address' '192.168.1.24...', 'Expires After' '00:08:56', and 'Status' 'bound'.
- CAP Pane (3):** Shows the configuration for a CAP (Client Authentication Protocol) profile. The 'CAP' tab is selected, and the profile is listed with 'Enabled' checked, 'Interfaces' 'wlan1', 'Certificate' 'none', 'Discovery Interfaces' 'bridge1', and 'CAPsMAN Addresses' '192.168.1.1'.
- Wireless Tables Pane (4):** Shows the configuration for a wireless interface named 'wlan1'. The 'CAP' tab is selected, and the interface is listed with 'Name' 'wlan1', 'Type' 'Wireless (Atheros AR9...)', and 'Tx' '4.0 kbps'.

The interface also includes a sidebar with various configuration options and a top navigation bar with 'Sessions', 'Settings', and 'Dashboard' tabs.

CAP Configuration on AP LAB

- ▶ Make sure that the latest package of firmware should be updated

The screenshot displays the WinBox v6.33.3 interface. The 'Package List' window is open, showing a table of installed packages. The 'wireless-cm2' package is highlighted with a red box, indicating it is the latest version (6.33.3) and was built on Dec/03/2015 16:08:10. Below the package list, the 'Wireless Tables' section shows the 'CAP' configuration for the 'wlan1' interface. The 'CAP' configuration dialog is also open, showing the following settings:

- Enabled:
- Interfaces: wlan1
- Certificate: none
- Discovery Interfaces: bridge1
- Lock To CAPsMAN:
- CAPsMAN Addresses: 192.168.1.1
- CAPsMAN Names: (empty)
- CAPsMAN Certificate Common Names: (empty)
- Bridge: bridge1
- Requested Certificate: (empty)
- Locked CAPsMAN Common Name: (empty)

CAP Connected with CAPsMAN LAB

The image displays three screenshots of Mikrotik WinBox, illustrating the configuration of CAP (Client Authentication Protocol) on different devices. Each screenshot shows the 'Wireless Tables' configuration page, which is managed by CAPsMAN.

Top Left Screenshot: WinBox v6.33.3 on WAP (mipsbe). Session: 00:0C:42:8D:08:3E. The 'Wireless Tables' table shows one entry:

Name	Type	Tx
RS wlan1	Wireless (Atheros AR9...	5.2 kbps

Top Right Screenshot: WinBox v6.32.4 on cAP (mi...). Session: E4:8D:8C:F4:7B:92. The 'Wireless Tables' table shows one entry:

Name	Type	Tx
RS wlan1	Wireless (Atheros AR9...	4

Bottom Screenshot: WinBox v6.34.2 on RB Groove A-52HPn (mipsbe). Session: D4:CA:6D:BF:6E:80. The 'Wireless Tables' table shows one entry:

Name	Type	Tx	Rx	Tx Pa
RS wlan1	Wireless (Atheros AR9...	5.2 kbps		0 bps

CAP Radio Table on CAPsMAN

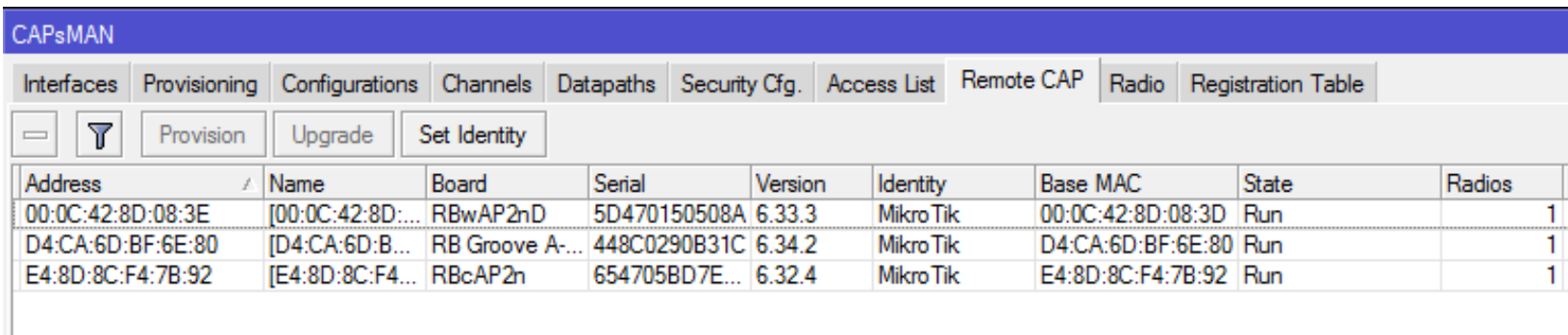
The screenshot shows the WinBox interface for a CAPsMAN controller. The window title is "admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)". The main menu includes "Sessions", "Settings", and "Dashboard". The "Session" is set to "192.168.1.1". The left sidebar contains a tree view with categories like "Quick Set", "CAPsMAN", "Interfaces", "Wireless", "Bridge", "PPP", "Switch", "Mesh", "IP", "MPLS", "Routing", "System", and "Queues". The main panel is titled "CAPsMAN" and has several tabs: "Interfaces", "Provisioning", "Configurations", "Channels", "Datapaths", "Security Cfg.", "Access List", "Remote CAP", "Radio", and "Registration Table". The "Radio" tab is selected and highlighted with a red box. Below the tabs is a "Provision" filter and a "Find" search box. The main area displays a table with the following data:

	Radio MAC	Remote CAP Name	Remote CAP Iden...	Interface
P	00:0C:42:8D:08:3E	[00:0C:42:8D:08:...	WAP CAP 1	MUM-USA1
P	D4:CA:6D:BF:6E:81	[D4:CA:6D:BF:6E:...	Mikro Tik	MUM-USA2
P	E4:8D:8C:F4:7B:93	[E4:8D:8C:F4:7B:...	Mikro Tik	MUM-USA3

At the bottom of the table area, it says "3 items (3 selected)".

CAP Identification On Capsman

- ▶ MAC / IP Address
- ▶ RouterBoard model
- ▶ Serial Number of the Board
- ▶ RouterOS version
- ▶ System Identity
- ▶ Main wireless MAC
- ▶ State of the CAP
- ▶ Provided radio count



The screenshot shows the CAPsMAN interface with a table of CAPs. The table has the following columns: Address, Name, Board, Serial, Version, Identity, Base MAC, State, and Radios. There are three rows of data.

Address	Name	Board	Serial	Version	Identity	Base MAC	State	Radios
00:0C:42:8D:08:3E	[00:0C:42:8D:...	RBwAP2nD	5D470150508A	6.33.3	MikroTik	00:0C:42:8D:08:3D	Run	1
D4:CA:6D:BF:6E:80	[D4:CA:6D:B...	RB Groove A...	448C0290B31C	6.34.2	MikroTik	D4:CA:6D:BF:6E:80	Run	1
E4:8D:8C:F4:7B:92	[E4:8D:8C:F4...	RBcAP2n	654705BD7E...	6.32.4	MikroTik	E4:8D:8C:F4:7B:92	Run	1

Station Registered on CAPsMAN

admin@192.168.1.1 (CAPsMAN CONTROLLER) - WinBox v6.30.4 on RB2011UiAS (mipsbe)

Sessions Settings Dashboard

Safe Mode Session: 192.168.1.1

Quick Set CAPsMAN Interfaces Wireless Bridge PPP Switch Mesh IP MPLS Routing System

CAPsMAN

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

Find

Interface	SSID	MAC Address	Tx Rate	Rx Rate	Tx Signal	Rx Signal	Uptime	Tx/F
MUM-USA1	MUM-USA-2016	2C:33:7A:50:F2:33	52Mbps...	65Mbps...	0	-65	00:40:01...	27 051/
MUM-USA1	MUM-USA-2016	00:73:8D:8B:ED:CC	65Mbps...	65Mbps...	0	-43	00:38:58...	9 760/7
MUM-USA3	MUM-USA-2016	90:8D:6C:AF:9E:11	65Mbps...	65Mbps...	0	-60	00:14:54...	27 930/

3 items (1 selected)

CAPsMAN Access List Features

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

Efficient Roaming Configuration TIP



Efficient Roaming Configuration TIP

admin@E4:8D:8C:ED:CB:37 (CAPSMAN) - WinBox v6.35 on RB951Ui-2HnD (mipsbe)

Session Settings Dashboard

Safe Mode Session: E4:8D:8C:ED:CB:37

CAPsMAN

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

#	MAC Address	MAC Mask	Interface	Signal Ra...	Action	Client To Clie...	VLAN Mo...	VLAN ID
0			all	-60..120	accept	yes		
1			all	-120..-61	reject	yes		

2 items (1 selected)

CAPs Access Rule <>

MAC Address: OK

MAC Mask: Cancel

Interface: all Apply

SSID Regexp: Disable

Signal Range: -60..120 Comment

Time

Action: accept Copy

Remove

AP Tx Limit:

Client Tx Limit:

Private Passphrase:

Client To Client Forwarding:

RADIUS Accounting:

VLAN Mode:

VLAN ID:

enabled

CAPs Access Rule <>

MAC Address: OK

MAC Mask: Cancel

Interface: all Apply

SSID Regexp: Disable

Signal Range: -120..-61 Comment

Time

Action: reject Copy

Remove

AP Tx Limit:

Client Tx Limit:

Private Passphrase:

Client To Client Forwarding:

RADIUS Accounting:

VLAN Mode:

VLAN ID:

enabled

RouterOS WinBox

MAC Authentication

- By using this rule you can reject the undesired stations only

The screenshot displays the Mikrotik WinBox interface for configuring CAPsMAN. The main window shows a table of MAC addresses and their associated actions. A dialog box titled "CAPs Access Rule <90:8D:6C:AF:9E:11>" is open, showing the configuration for a specific rule. The MAC Address field is set to 90:8D:6C:AF:9E:11, and the Action is set to reject. The rule is currently enabled.

#	MAC Address	MAC Mask	Interface	Signal Ra...	Action	Client To Clie...	VLAN Mo...	VLAN ID
0	90:8D:6C:AF:9E:11				reject			
1			all	-60..120	accept	yes		
2			all	-120..61	reject	yes		

Dialog Box: CAPs Access Rule <90:8D:6C:AF:9E:11>

- MAC Address: 90:8D:6C:AF:9E:11
- MAC Mask: [empty]
- Interface: [empty]
- SSID Regexp: [empty]
- Signal Range: [empty]
- Action: reject
- AP Tx Limit: [empty]
- Client Tx Limit: [empty]
- Private Passphrase: [empty]
- Client To Client Forwarding: [empty]
- RADIUS Accounting: [empty]
- VLAN Mode: [empty]
- VLAN ID: [empty]

Buttons: OK, Cancel, Apply, Disable, Comment, Copy, Remove

Status: enabled

Brand Based Authentication

- By using this rule you can allow selected Brands Via Mac Orders

The screenshot displays the Mikrotik WinBox CAPsMAN configuration interface. The top navigation bar includes 'Session', 'Settings', and 'Dashboard'. Below this, there are tabs for 'Interfaces', 'Provisioning', 'Configurations', 'Channels', 'Datapaths', 'Security Cfg.', 'Access List', 'Rates', 'Remote CAP', 'Radio', and 'Registration Table'. A table lists access rules with columns for '#', 'MAC Address', 'MAC Mask', 'Interface', 'Signal Ra...', 'Action', 'Client To Clie...', 'VLAN Mo...', 'VLAN ID', and 'Comment'. Two rules are visible: rule 3 with MAC Address 90:8D:6C:00:00:00 and Action 'accept', and rule 4 with MAC Address 90:8D:6C:00:00:00 and Action 'reject'. Below the table, two configuration panels are shown for 'CAPs Access Rule <90:8D:6C:00:00:00>'. The left panel shows the rule configuration with fields for MAC Address (90:8D:6C:00:00:00), MAC Mask (FF:FF:FF:00:00:00), Interface, SSID Regexp, Signal Range, Time (00:00:00 - 1d 00:00:00), Days (all checked), Action (accept), AP Tx Limit, Client Tx Limit, Private Passphrase, Client To Client Forwarding, RADIUS Accounting, VLAN Mode, and VLAN ID. The right panel shows the rule configuration with fields for MAC Address, MAC Mask, Interface, SSID Regexp, Signal Range, Time, Action (reject), AP Tx Limit, Client Tx Limit, Private Passphrase, Client To Client Forwarding, RADIUS Accounting, VLAN Mode, and VLAN ID. The status 'enabled' is shown at the bottom of both panels.

#	MAC Address	MAC Mask	Interface	Signal Ra...	Action	Client To Clie...	VLAN Mo...	VLAN ID	Comment
3	90:8D:6C:00:00:00	FF:FF:FF:00:00:00			accept				Brand Allow
4	90:8D:6C:00:00:00				reject				Deny All

Our Contact details

- ▶ **Official Address: C-89 2nd Floor Gulshan-e-Hadeed Phase-I,
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Questions & Answers

<http://wiki.mikrotik.com/wiki/Manual:CAPsMAN>

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