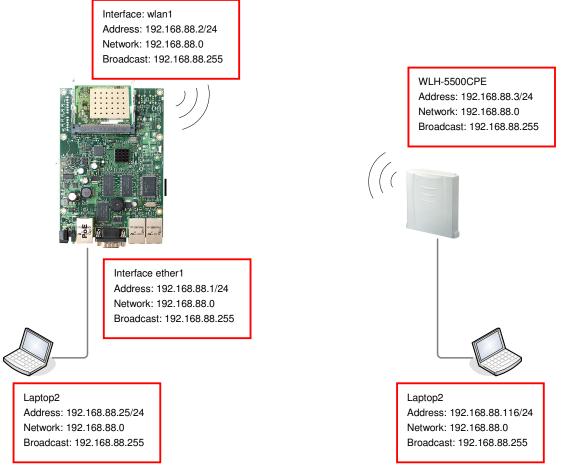
WH-5500CPE/WHA-5500CPE-NT and Mikrotik Router Board Connection Guide

This document guides you to connect WHA-5500CPE/WHA-5500CPE-NT and Mikrotik RB-433 with wireless interface. When Mikrotik is set to be AP Bridge mode, WHA-5500CPE/WHA-5500CPE-NT can connect to it by using client infrastructure mode and WDS Bridge pure MAC mode.

Topology:



Devices:

Mikrotik RB-433 Router Board with one Atheros AR5414A mini-PCI with RouterOS installed. WHA-5500CPE firmware version **1.00e20** or later, /WHA-5500CPE-NT firmware version **1.00e13** or later. Laptop * 2

Software:

Winbox configuration tool (download)

In this document, we use winbox for Mikrotik configuration only.

Note: Please change the IP address of WHA-5500CPE/WHA-5500CPE-NT and Laptops before process. In this document, we use IP address as above topology. Default IP address of Mikrotik ether1 is 192.168.88.1.

Connection 1: Mikrotik in AP Bridge mode, WHA-5500CPE/WHA-5500CPE-NT in client infrastructure mode

1.1 Miktotik ap bridge configuration:

<u>Step1.</u> Launch winbox software, enter 192.168.88.1 in "Connect To" field and click "Connect" button.

🔳 WinBox I	oader v2.2.13	_ 🗆 X
<u>C</u> onnect To:	192.168.88.1	Connect
<u>L</u> ogin:	admin	\smile
Password:	Keep Password ✓ Secure Mode	<u>S</u> ave <u>R</u> emove
<u>N</u> ote:	Load Previous Session	<u>I</u> ools
Address 🛆	User Note	

The management interface shows up as following.

1 a	📼 admin@192.168.88.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)										
5	Q4										HidePasswords 🔳 🛅
	Interfaces										
	Wireless										
	Bridge	Interf	ace List								×
	PPP	Interface	1	EoIP Tunnel	ID Toursel	UT AN	VDDD	Dending			
	IP Þ				-	YLAN	VKKF	Bonaing			
	Routing 🗅	+ • =							1		Find
	Ports	R 🕬	me ether1	∧ Type Ethernet		Tx	0.9 kbps	Rx 1440 bps		Rx Pac 2	_
	Queues		ether2	Ethernet		1	0.9 KDps O bps				
	Drivers		ether3	Ethernet			O bps	O bps	0	0	
		X 🚸	wlan1	Wireless	(Atheros AR						
	Files										
	Log										
	SNMP										
×	Users										
R	Radius										
WinBox	Tools 🗅										
	New Terminal										
outerOS	Telnet	4 items									
þ	Password	4 1181115									
ğ	Certificates										
Ř	Make Supout.rif										

Step2. Add IP address to wireless interface (waln1)

Click IP \rightarrow Address

		.1 (MikroTik) - WinF	30x v3.10 o	n RB433 (n	ipsbo	:)						
5	(*								~	Hide H	Passwords 📕 (ⁱ
	Interfaces											
	Wireless											
	Bridge	Interface List										×
	PPP			ID T I I	T 4 3T	UDDD	D II				-	익
	IP 🕑	Addresses	oir Iunnei	IP Tunnel V	LAN	VRRP	Bonding				Find	
	Routing D	Routes	Type]	Tx		Rx	Tx Pac	Rx Pac			Į
	Ports	Pool	Ethernet).9 kbps	r.x 1464 bps	1x rac 1	KX Fac 2			-
	Queues	ARP	Ethernet			O bps		0	0			
	Drivers	Firewall	Ethernet	(Atheros AR		O bps	O bps	0	()		
	System 🗅	Socks	11101000	(1101010011111								1
	Files	UPnP										
	Log	Traffic Flow										
	SNMP	Accounting										
\times	Users	Services										
WinBox	Radius	Packing										
/in	Tools D	Neighbors										
	New Terminal	DNS										
RouterOS	Telnet	Web Proxy										_
e	Password	DHCP Client			_							
F	Certificates	DHCP Server										
Ř	Make Supout.rif	DHCP Relay										
		Hotspot										_
		IPsec										

It then Address List menu, click "+" to add IP address on network interface.

🔳 admin@192.168.88	3.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)
6	🗹 Hide Passwords 📕 🛅
Interfaces Wireless Bridge PPP IP N	Address List X Interface Interface Interface Address Address Network Broadcast Interface Interface Interface Interface Interface Interface Find Interface Interface
Click here to add	
System P Files Log SNMP Users Radius Tools Tools P New Terminal	1 item
Telnet Password Certificates Make Supout.rif Manual Exit	4 items (1 selected)

When "New Address" dialog box shows, fill the IP address information to wlan1.

In our example, wlan1's IP address is set to be:

Address: 192.168.1.2/24

Network: 192.168.1.0

Broadcast: 192.168.1.255

Interface: wlan1

Click Apply and OK button to save.

Right click on wlan1 interface and click "Enable" button to enable.

🔳 a	dmin@192.168.88	.1 (MikroTik) - ₩inBox v3.10 on RB433 (mipsbe)	:
Ю	Q 4	🗹 Hide Passwords 🔳 🛅	J
	Interfaces		Ĩ
	Wireless		l
	Bridge	Interface List	1
	PPP	Interface Ethernet EoIP Tunnel IP Tunnel VLAN VRRP Bonding	l
	IP D		l
	Routing D		1
	Ports	Name A Type Tx Rx Tx Pac Rx Pac R 4:>ether1 Ethernet 10.9 kbps 1464 bps 1 2	1
	Queues	ether2 Ethernet 0 bps 0 bps 0 0	1
	Drivers	eisether3 Ethernet O bps O bps	1
		Wirelass (4 theres 4 P 0 bps 0 bps 0 bps 0 0 0	1
	System 🗅	Detail Mode	1
	Files	Inline Comments	1
	Log		1
		Show Columns 🕨	1
	Right click	on wlan1	1
	Radius	Find Next Ctrl+G	1
<u> </u>	Tools	Select All Ctrl+A	1
õ	New Terminal		1
Ľ	Telnet	bbA	1
\geq		4 items (1 selected) Remove R	1
in	Password	Enable E	ł
Ő	Certificates	Disable	
RouterOS WinBox	Make Supout.rif	Comment C	
out	Manual	Torch	1
Ř	Exit		

Step3. Configure wlan1 to AP Bridge mode

Double click on wlan1 to configure.

🔳 a	dmin@192.168.88	8.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)
5	Q 4	🗹 Hide Passwords 📕 🖻
	Interfaces	
	Wireless	
	Bridge	Interface List
	PPP	Interface Ethemet EoIP Tunnel IP Tunnel VLAN VRRP Bonding
	IP Þ	Louis Louis a same same same
	Routing D	
	Ports	Name ∧ Type Tx Rx Tx Pac Rx Pac ▼ R €jeether1 Ethernet 12.0 kbps 1464 bps 1 2
	Queues	steeter2 Ethernet 0 bps 0 bps 0 0
	Drivers	elsether? Ethernet O bps 0 0 @pwlan1 Wireless (Atheros AR 0 bps 0 bps 0 0
	System D	🚸 wlan1 Wireless (Atheros AR O bps O bps O O
	Files	
	Log	
	SNMP	
	Users	Wlan1 is enabled,
	Radius	double click to configure
	Tools	
õ	10015	
B	New Terminal	
Ň	Telnet	4 items (1 selected)
S	Password	
6	Certificates	
RouterOS WinBox	Make Supout.rif	
0	Manual	
R	Exit	

	🖛 admin@192.168.88.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)									
⊳	Q4		🖌 Hide Passwords 📗 🔂							
	Interfaces	Interface <wlan1></wlan1>	x							
	Wireless	General Wireless WDS Nstreme Status Traffic	OK							
	Bridge	Interface Mode: ap bridge	Cancel							
	PPP	Interface E Band: 5GHz								
	IB D		Apply							
	Routing 🗅	Inequency. 5100 ♥ Milz	Disable							
	Ports	R «ipetha SSIL): Mikrolik	Comment							
	Queues	♦\$>ethe Scan List:								
	Drivers	wla Security Profile: default ∓	Torch							
	System 🗅	Antenna Mode: antenna a 두	Scan							
	Files		Freq. Usage							
	Log	Default AP Tx Rate: v bps	Align							
	SNMP	Default Client Tx Rate: 📃 🔻 bps								
	Users	✓ Default Authenticate	Sniff							
	Radius	 Default Forward 	Snooper							
×	Tools D	Hide SSID	Reset Configuration							
B	New Terminal									
WinBox	Telnet	4 items (1 sele	Advanced Mode							
	Password	4 400 10 10 10 10 10 10 10 10 10 10 10 10 1								
ŏ	Certificates									
outerOS	Make Supout.rif									
ou	Manual	disabled running slave	searching for network							
Ř	Exit	argamen brunning Stave	searching for herwolk							

Select "ap bridge" mode and change parameters

In our sample, we use these parameters:

Mode: ap bridge Band: 5GHz Frequency: 5180MHz (Channel 36) SSID: MikroTik Security: default (none) Antenna Mode: antenna a (main output of mini-PCI)

Step4. Bridge wlan1 and ether1

All interfaces can not communicate to each other by default, so that wlan1 and ether1 can not send data to each other. It needs to add bridge to these two interfaces.

Click "Bridge" menu and "+" button.

1	🖬 admin@192.168.1.2 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)								
5	(4						✓	Hide Passwords	
	Interfaces								
	Wireless								
	Bridge	📑 Interface L	ist						×
	PPP	📑 Brid ge							×
	IP D	Bridge Ports	Filters Broute NAT Hosts	:					
	Routing D		🛞 🖅 🍸 Settings					Find	
	Ports	Name	Type	Tx	Rx	Tx Pac	Rx Pac	MAC Address	-
	Queues								
	Drivers								
	System 🗅								
	Files								
	Log								
	SNMP								
	Users								
	Radius								
×	Tools 🗅								
WinBox	New Terminal								
Vir	Telnet	•							ਾ
	Password	0 items out of 4							<u> </u>
ŏ	Certificates	<u></u>							
Ę	Make Supout.rif								
outerOS	Manual								
R	Exit								

It shows "New Interface" dialog box. Click "Apply" and "OK" to save. In our example, we did not change parameters here.

• •••••••••••••••••••••••••••••••••••	.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	2 (MikroTik) - Wir	1Box v3.10 on RB433	(mipsbe)			_ 🗆 🗵
Ø	(P					🗸 Hid	le Passwords 📔 👸
	Interfaces Interfaces Wireless Bridge PPP IP Routing Ports Queues Drivers System Files Log SNMP Users Radius Tools New Terminal	2 (MikroTik) - Wir Interface List Bridge Bridge Ports Filt Prove State Name	General STP Status General STP Status Name: Type: MTU: MAC Address:	Traffic bridge 1 Bridge		OK	
S W	Telnet Password	 I define the second sec	disabled	running	slave		Þ
OS	Certificates	U nems out of 4	Juisabieu	Fromming	Janave		
Ę	Make Supout.rif						
out	Manual						
Ř	Exit						

Add wlan1 and ether1 to Ports. Click "Ports" and "+"

I a	.dmin@192.168.88	8.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)	۲
5	(🗹 Hide Passwords 🔳 🔂	
	Interfaces		I
	Wireless		l
	Bridge	Interface List	1
	PPP	Bridge	
	IP D	Bridge Ports Filters Broute NAT Hosts	1
	Routing 🗅		
	Ports		
	Queues	Interface 🔺 Bridge Priority (Path Cost Horizon Role Root Path 🔻	
	Drivers		
	System 🗅		
	Files		
1000	Log		
	SNMP		
	Users		
	Radius		
×	Tools 🕑		
B	New Terminal		
Vin	Telnet		
\geq	Password	0 items	
ö	Certificates		4
Ę	Make Supout.rif		
RouterOS WinBox	Manual		
Ř	Exit		

It then shows the "New Bridge Port" dialog box, select and set parameters then click "Apply" and "OK" button to save.

II (admin@192.168.88	8.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)	
Ø	9	▼ Hide Pass	words 📕 🔒
	Interfaces		
	Wireless		
	Bridge	Interface List	×
	PPP	Dridge Port	×
	IB D	Bridge Ports Fi	
	Routing D	theriace: etheri	Find
	Ports	Bridge: bridge1 F Apply Root	
	Queues	Interface (Interface)	
	Drivers	Priority: 80 hex Disable	
	System 🗅	Path Cost: 10 Comment	
	Files	Horizon: Copy	
	Log	Edge: auto	
	SNMP	Point To Point: auto	
	Users	External FDB: auto	
	Radius		
X	Tools D		
WinBox	New Terminal		
Nir	Telnet		
	Password	0 items	
Q	Certificates	disabled inactive	
RouterOS	Make Supout.rif		
lou	Manual		
Ř	Exit		

🔳 admin@19	2.168.88.1 (MikroTi	k) - WinBox v3.10 on RB433 (mipsbe)	
5			🗹 Hide Passwords 📗 🗎
Interfaces			
Wireless			
Bridge	Interfac	e List	X
PPP	Bridge	New Bridge Port	× ×
IP	N.	orts Fi	ОК
Routing		Interface: wlan1	Cancel Find
Ports	+ -	Bridge: bridge1	
Queues	Interf 4=tet	her1	
Drivers		Priority: 80	hex Disable
System	Þ	Path Cost: 10	Comment
Files		Horizon:	Сору
Log		Edge: auto	T Remove
SNMP			
Users		Point To Point: auto	
Radius		External FDB: auto	.
🗙 Tools	Þ		
🔏 New Tem	ninal		
Tools New Tem Telnet			
Password	1.11		
Certificate	es 1 item	disabled	inactive
😈 Make Sup	out.rif	,,	
Make Sup Manual			
🞽 Exit			

In our example, we add ether1 and wlan1 to Bridge.

Note: Please add ether1 first.

<u>Step5.</u> Back to Interface and confirm interfaces are enabled. In our example, bridge1, ethernet1 and wlan1 must be enabled.

	dmin@192.168.8	8.1 (Mikro	Tik) - WinB	ox v3.10 c	on RB433	(mipsb	e)				_	
Ю	Q									✓	Hide Passwords	— 🗎
	Interfaces											
	Wireless											
	Bridge	Interf	ace List									×
	PPP	Interface	-	ID Townel	ID Tananal	VIAN	VDDD	Dandina				
	IP Þ				IF IUNNEI	YLAN	YKKF	Bonding				
	Routing D	+ -							1	,	Find	
	Ports	No.		Z Type		Tx		nn	Tx Poe	Rx Post		
	0		bridge1 ∙ether1	Bridge Ethernet			3.5 kbps 3.5 kbps					
	Queues		ether2	Ethernet		1	O bps	0 bps				
	Drivers		ether3	Ethernet			0 bps					
	System 🗅	*	wlan1	Wireless	(Atheros AF	۹	O bps	O bps	0	0		
	Files											
	Log											
	SNMP											
	Users											
	Radius											
\times	Tools D											
8	New Terminal											
/in	Telnet	E ihour A	1									
\leq	Password	5 items (1	selected)									
Ö	Certificates	2 items										
RouterOS WinBox	Make Supout.rif											
out	Manual											
R	Exit											

1.2 WHA-5500CPE/WHA-5500CPE-NT connect to Mikrotik using client infrastructure mode

Step1. Change operation mode to client infrastructure

In "Advanced Settings" \rightarrow "Operational Mode" select "Client Infrastructure" and click "Apply" button to save. WHA-5500CPE/WHA-5500CPE-NT then reboot to client infrastructure mode.



Step2. Site survey and connect to Mikrotik.

Click "Device Status" \rightarrow "Site Survey", you will see Mikrotik's SSID, click "ASSOCIATE" button to connect.

0760	Air Liv	e [*] Multi-Func ^{802.11a/b/g}	tion AP		(www.airlive.com)
	Setup Wizard	Device Status	Advanced Setti	ings 🍟 System	Tools 🔄 Logout
C Device Status	🗂 Site survey				
> System Log	Site survey list :				
Radio Table	ESSID	MAC Address Conr Mode	Channel Turbo Sup	er XR WME Signal	l (hm) Security Network
Site Survey	MikroTik	00:0c:42:1f:77:4c A	36	80	None AP
Device Information Firmware Version: 2.00e23 Device IP: 192.168.1.1 Device MAC: 00:4F:69:52:3B:86 Wireless MAC: 00:4F:69:52:3B:85 Uptime: (dd:hh:mm) 0:0:1	NOTE: The sitesurvey will a Bridge device.	show both Ap and Bridge		REFRESH	e more likely to be

Laptop2 ping to Laptop1:

en C:\WINDOWS\system32\cmd.exe - ping 192.168.88.25 -t	<u>- 🗆 ×</u>
Microsoft Windows XP	
(C) Copyright 1985-2001 Microsoft Corp.	
C:\Documents and Settings\Ryan>ping 192.168.88.25 -t	
Pinging 192.168.88.25 with 32 bytes of data:	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=2ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
	-

Connection 2: Mikrotik in AP Bridge mode, WHA-5500CPE/WHA-5500CPE-NT in WDS

Bridge pure MAC mode

This connection follows connection 1, Mikrotik add WDS interface in wlan1.

WHA-5500CPE/WHA-5500CPE-NT changes to WDS Bridge pure MAC mode.

2.1 Mikrotik add WDS in wlan1

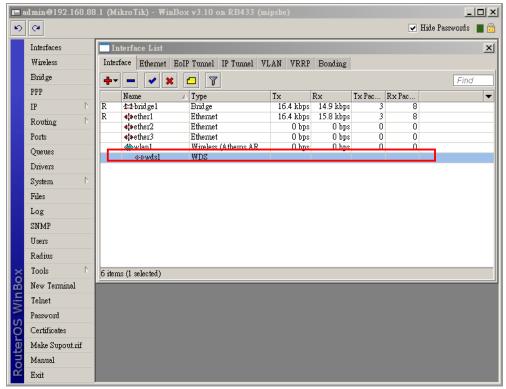
<u>Step1.</u> Add WDS interface for wlan1. Click Interface \rightarrow "+" and select "WDS"

	192.168.88	.1 (MikroTik) - Wir	Box v3.10 o	on RB433	(mip	sbe)			_ 🗆 ×
Ŋ	Q							•	Hide Passwords 📕 💼
(Interfaces								
	Wireless								
	Bridge	Interface List							×
	PPP	Interface Ethernet	EoIP Tunnel	IP Tunnel	VL.	AN VRRP	Bonding		
	IP D Routing	+- + ~ 8	8 🖻 🍸]					Find
	11000016	EorP Tunnel	🛆 Туре			Гх	Rx	Rx Pac	-
	Ports	IP Tunnel	Bridge			23.6 kbps			
	Queues	VLAN	Ethernet Ethernet			23.6 kbps			
	Drivers	VRRP	Ethernet		_	O bps O bps		-	
	System D	Bonding		(Atheros AF		0 bps 0 bps			
	Files	Bridge							
	Log	PPP Server							
	SNMP	PPP Client							
		PPTP Server							
X	Users	PPTP Client							
ğ	Radius	L2TP Server L2TP Client							
li'	Tools	OVPN Server							
\leq	New Terminal	OVPN Server							
SO	Telnet	PPPoE Server						 	
er	Password	PPPoE Client						 	
RouterOS WinBox	Certificates	VirtualAP							
Ř	Make Supout.rif	WDS Nstreme Dual							

Enter the WHA-5500CPE/WHA-5500CPE-NT's MAC address in the "WDS Address" field. Click "Apply" and "OK" button to save.

	admin@192.168.88	8.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)	×
Ю	(4	🗹 Hide Passwords 📕	8
	Interfaces		
	Wireless		
	Bridge	Interface List	×
	PPP	Interface Ethemet FoIP 1	-1
	IB D	deneral web maine OK	
	Routing D	Master Interface: Wanl F Cancel	ŧI
	Ports	R 11 bridge1 E WDS Address: 00:41:69:52:3b:85 Apply 25	-
	Queues	R «isether1 E 25 «isether2 E Disatile 0	_
	Drivers	♦isether2 E ♦isether3 E	-11
	System 🗅	www.an1 V Comment 0	
	Files	Сору	
	Log	Remove	
	SNMP	Towh	
	Users		
	Radius		
X	Tools D		
WinBox	New Terminal		
Nir	Telnet	5 items disabled running slave active	-11
	Password		21
5	Certificates		
outerOS	Make Supout.rif		
Rol	Manual		
ш.	Exit		

The interface then shows WDS for wlan1, as following:



Step3. Add WDS to Bridge Ports

i = 8	dmin@192.168.88	.1 (MikroTik) - ¥	¥inBox v3.10 on RB433	(mipsbe)				_	
ю	Q4						~	Hide Passwords	•
	Interfaces								
	Wireless								
	Brid ge	Interface List							×
	PPP	Brid ge							×
	IP D	Bridge Ports F	ilters Broute NAT Host	5					
	Routing D		× @ 7					Find	
	Ports	Interface	∧ Bridge	Priority (Path Cost	Horizon	Role	Root Path	
	Queues	ttether1	bridge1		10		designated por		
	Drivers	1t_twds1	bridge1	80			disabled port		
	System 🗅		8				1		
	Files								
	Log								
	SNMP								
	Users								
	Radius								
×	Tools D								
WinBox	New Terminal								
/in	Telnet								
>	Password	3 items							
0	Certificates					_			
ter	Make Supout.rif								
B	Manual								
Ř	Exit								

Step3. Enable WDS in wlan1

Double click wlan1, and change parameters in "**Interface <wlan1>**" dialog. Click "Apply" and "OK" button to save.

	admin@192.168.88	.1 (MikroTik) - WinBox	: v3.10 on RB433 (mipsbe)		
Ø	Q					🔽 Hide Passwords 📗 🛅
	Interfaces	Interface List	Interface <wlan< td=""><td>1></td><td></td><td>× ×</td></wlan<>	1>		× ×
	Wireless	Interface Ethernet EoI		WDS Nstreme Statu	s Traffic	OK
	Bridge	+ ~ ×				
	PPP	Name	WDS Mode		₹	Cancel
	IP 🕑	R 🖾 bridge1	WDS Default Bridge	: bridge1	₹	Apply
	Routing 🕑	R «sether1 «sether2		WDS Ignore SSID		Disable
	Ports	ether3				Comment
	Queues	«≫wlan1 ▼ «->wds1				Comment
	Drivers					Torch
	Double click	wlan1				Scan Freq. Usage
	Log					
	SNMP					Align
	Users					Sniff
	Radius					Snooper
Box	Tools 🗅	6 items (1 selected)				Reset Configuration
B	New Terminal	p <u></u>				
Win	Telnet					Advanced Mode
	Password					
Ö	Certificates					
RouterOS	Make Supout.rif					
put	Manual					
R	Exit		disabled	running	slave	running ap

In our example, we select "WDS Mode" to "static" and "WDS Default Bridge" to "bridge1".

Some Access Point can not send SSID in WDS mode. Please enable "WDS Ignore SSID" in this situation.

In our example, we use the original SSID "MikroTik".

2.2 WHA-5500CPE/WHA-5500CPE-NT WDS configuration

Login to WHA-5500CPE/WHA-5500CPE-NT. In "Advanced Settings" \rightarrow "Operation Mode",

select "WDS Bridge" filled parameters and click "ADD" button to add.

In our example, we use these parameters:

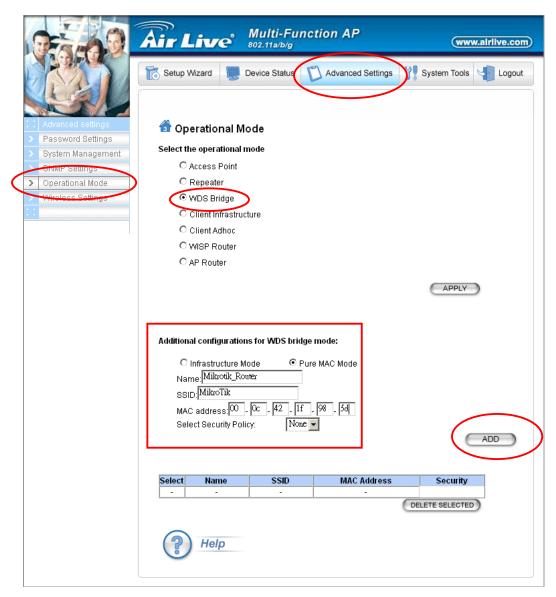
WDS Bridge Mode: Pure MAC Mode

Name: Mikrotik_Router

SSID: Mikrotik

MAC address: 00-0c-42-1f-98-5d

Security Policy: None



When configured successfully, the added WDS shows in the list.

Select	Name	SSID	MAC Address	Security
0	Mikrotik_Router	MikroTik	00-0c-42-1f-98-5d	None

Laptop2 ping Laptop1

en C:\WINDOWS\system32\cmd.exe - ping 192.168.88.25 -t	<u>- 🗆 ×</u>
Microsoft Windows XP	
(C) Copyright 1985-2001 Microsoft Corp.	
C:\Documents and Settings\Ryan>ping 192.168.88.25 -t	
Pinging 192.168.88.25 with 32 bytes of data:	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=2ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
Reply from 192.168.88.25: bytes=32 time=1ms TTL=128	
	-

Security Connection Configuration

In this document, we introduce WEP, WPA and WEP encryption in Mikrotik. Please note that WHA-5500CPE/WHA-5500CPE-NT WDS mode provide WEP encryption only. If you need to use WPA and WPA2, please configure WHA-5500CPE/WHA-5500CPE-NT to Client Infrastructure mode.

	admin@192.168.88	.1 (MikroTik) - WinBox v3.10 on RB433 (mipsbe)
5	(H	🗹 Hide Passwords 📕 🛅
	Interfeces	
(Wireless	Bridge
	Bridge	Bridge Ports Filters Broute NAT Hosts
	PPP	Interface List
	IP 🕑	
	Routing 🕑	Wireless Tables
	Ports	Interfaces Nstreme Dual Access List Registration Connect List Security Profiles
	Queues	
	Drivers	Name / Mode Authenticatio Unicast Ciphers Group Ciphers WPA Pre-Shared WPA2 I
	System 🗅	RETROTE 1 PTE Antonio Antonio Antonio
	Files	
2005	Log	
	SNMP	Double Click to configure
	Users	Double Olick to conligure
	Radius	
X	Tools D	
ĕ	New Terminal	
Nir	Telnet	
S	Password	
6	Certificates	
te	Make Supout.rif	1 item (1 selected)
RouterOS WinBox	Manual	
R	Exit	

Click "Wireless" \rightarrow "Security Profiles", and double click on default profile.

It then pops up the Security Profile <default> dialog.

Security Profile -	:default>	×
General RADIUS E	AP Static Keys	OK
Name	default	Cancel
Mode		Apply
 Authentication Types WPA PSK 	dynamic keys none static keys optional static keys required	Сору
🔲 WPA EAP		Remove
– Unicast Ciphers –		
🔲 tkip	aes com	
- Group Ciphers		
🗌 tkip	aes ccm	
WPA Pre-Shared Key	:	
WPA2 Pre-Shared Key	:	
Supplicant Identity	MikroTik	
Group Key Update	00:05:00	

In security mode, "dynamic keys" is to set WPA and WPA2 encryption and "static keys" is to set WEP encryption.

When select "dynamic keys", you can select Authentication Types, Unicast Ciphers and Group Ciphers.

Ecurity Profile <default></default>	×
General RADIUS EAP Static Keys	OK
Name: default	Cancel
Mode: dynamic keys 두	Apply
– Authentication Types —	
🗌 WPA PSK 📃 WPA2 PSK	Сору
WPA EAP WPA2 EAP	Remove
– Unicast Ciphers —	
🗌 tkip 📄 aes.ccm	
- Group Ciphers	
tkip aes ccm	
WPA Pre-Shared Key:	
WPA2 Pre-Shared Key:	
Supplicant Identity: MikroTik	
Group Key Update: 00:05:00	

When select "static keys", you have to fill the key in "Static Keys" dialog.

💳 Security Pro	ofile <default></default>	×
General RADI	US EAR Static Keys	OK
Key O:	none 🔻 Ox	Cancel
Key 1:	104 bit wep 40bit wep 0x	Apply
Key 2:	aes-ccm none 0x	Сору
Key 3:	none 🔻 Ox	
Transmit Key:	key O 🐺	Remove
St. Private Key:	none 🔻 Ox	