

Mikrotik Wireless PTP & PTMP Link Features

By

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About Me

Name:

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**BS Telecommunication
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Technical Sales Engineer

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- MTCNA (MikroTik Certified Network Associate)
- UBWS (Ubiquiti Broadband Wireless Specialist)
- UBWA (Ubiquiti Enterprise Wireless Admin)
- CCNA (Cisco Certified Network Associate)

About Company

- Started in 2003
- Top Wireless/Security & Network Equipment Distributor in Pakistan.
- We are Master Distributor for:
 - MIKROTIK, Yeastar, Fanvil, GrandStream, UBNT.....
- We Deals in:
- IT managed services
- Trainings
- Security Solutions
- Electrical & Instrumentation Solutions with SCADA

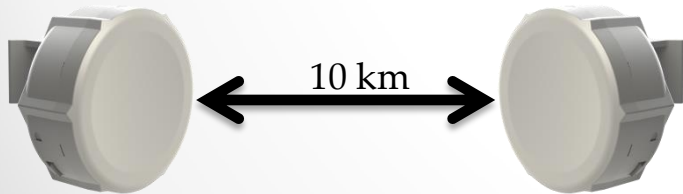
Presentation Objective

- PTP & PTMP Connections
- Access List and Connect List
- Basic Features
- Q & A

Types Of Connections

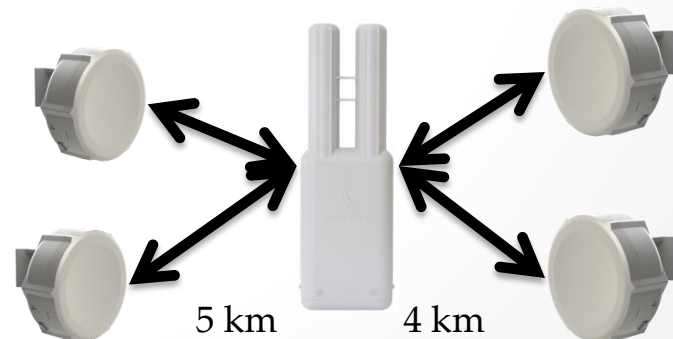
PTP (Point to Point)

- You can establish long distance link.
- Better throughput.



PTMP (Point to Multipoint)

- Mostly use in Wireless ISPs
- Cost effective than PTP



Advantages & Disadvantages Of Wireless Links

Advantages

- Easy to install
- Cost effective
- No cable to pull

Disadvantages

- Country limitation
- Bandwidth limit

Wireless Operation Modes in Mikrotik

- AP-bridge/Bridge <-> Station
- AP-bridge/Bridge <-> Station-wds/Stationbridge
- AP-bridge <-> WDS-slave
- AP-bridge/Bridge <-> Stationpseudobridge

RouterOS License Requirement

- PTP link requires at least Level 3
 - Example: Bridge <-> Station
- PTMP link requires on AP at least Level 4 and on clients at least Level 3
 - Example: AP-bridge <-> Station
- For Non RouterOS AP:
 - Example: Non RouterOS AP <-> pseudobridge

PTP & PTMP link Configuration

- PTP Link Requirements:
 - 1 x Wireless Equipment For Access Point Minimum RouterOS L3
 - 1 x Wireless Equipment For Station Minimum RouterOS L3
- PTMP Link Requirements:
 - 1 x Wireless Equipment For Access Point Minimum RouterOS L4
 - 1 - x Wireless Equipment For Station Minimum RouterOS L3

PTP & PTMP link Configuration

- Access Point WDS Configuration Steps (PTP):

The screenshot displays the RouterOS WinBox interface for configuring WDS on an Access Point. The interface is divided into several sections, with red boxes and numbers highlighting the steps for PTP configuration:

- Step 1:** The 'Wireless' tab is selected in the left sidebar.
- Step 2:** The 'Wireless' tab is selected in the top menu bar.
- Step 3:** The 'General' tab is selected for the 'wlan1' interface. The configuration includes:
 - Mode: ap bridge
 - Band: 5GHz-A/N/AC
 - Channel Width: 20MHz
 - Frequency: 5765
 - SSID: MUM-PAKISTAN
 - Scan List: default
 - Wireless Protocol: any
 - Security Profile: default
 - Bridge Mode: enabled
 - VLAN Mode: no tag
 - VLAN ID: 1
- Step 4:** The 'WDS' tab is selected for the 'wlan1' interface. The configuration includes:
 - Tx Chains: ☒ chain0 ☒ chain1
 - Rx Chains: ☒ chain0 ☒ chain1
 - AMSDU Limit: 8192
 - AMSDU Threshold: 8192
 - Guard Interval: any
 - AMSDU Priorities: ☒ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7
- Step 5:** The 'WDS' tab is selected for the 'wlan1' interface. The configuration includes:
 - WDS Mode: dynamic
 - WDS Default Bridge: bridge1
 - ☐ WDS Ignore SSID
- Step 6:** The 'Apply' button is clicked in the bottom right corner.
- Step 7:** The 'Advanced Mode' button is clicked in the bottom right corner.

PTP & PTMP link Configuration

- Station WDS Configuration Steps (PTP) :

The screenshot displays the RouterOS WinBox interface for configuring a Station WDS on the wlan2 interface. The configuration is divided into two main windows: 'Interface <wlan2>' and 'Interface <wlan1>'.

Interface <wlan2> Configuration (Left Window):

- General Tab:** Mode is set to 'station wds' (Step 3). Band is '5GHz-A/N/AC', Channel Width is '20MHz', Frequency is 'auto', SSID is 'MUM-PAKISTAN', Scan List is 'default', Wireless Protocol is 'any', Security Profile is 'default', WPS Mode is 'push button', Bridge Mode is 'enabled', VLAN Mode is 'no tag', and VLAN ID is '1'.
- Buttons:** 'OK', 'Cancel', 'Apply', 'Disable', 'Comment', 'Advanced Mode', 'Torch', 'WPS Accept', 'Scan...', 'Freq. Usage...', 'Align...', 'Sniff...', 'Snooper...', and 'Reset Configuration' are visible.
- Bottom:** 'Default AP Tx Rate' and 'Default Client Tx Rate' are set to '0 bps'. 'Default Authenticate' and 'Default Forward' are checked (Step 4).

Interface <wlan1> Configuration (Right Window):

- Wireless Tab:** Tx Chains and Rx Chains are both checked for 'chain0' and 'chain1' (Step 5).
- Buttons:** 'OK', 'Cancel', 'Apply', 'Advanced M...', 'Torch', 'WPS Acc...', 'Scan...', 'Freq. Usag...', 'Align...', 'Sniff...', 'Snooper...', and 'Reset Configu...' are visible.
- Step 6:** The 'Apply' button is highlighted.

Wireless Tables (Top):

Name	Type	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)
wlan1	Wireless (Atheros AR9300)	0 bps	0 bps	0	0
wlan2	Wireless (Atheros AR9888)	0 bps	0 bps	0	0

RouterOS WinBox Sidebar:

- Quick Set
- CAPsMAN
- Interface (Step 1)
- Wireless
- Bridge (Step 2)
- PPP
- Switch
- Mesh
- IP
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- MetaROUTER
- Partition
- Make Supout.tif
- Manual
- New WinBox
- Exit

PTP & PTMP link Configuration

- Result UDP (PTP) :

admin@E4:8D:8C:D6:B1:D3 (CPE) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)

Session Settings Dashboard

Safe Mode Session: E4:8D:8C:D6:B1:D3

Always Check CPU Percentages As well CPU: 41%

1 Click on Tools and Select BANDWIDTH TEST

1 - Test UDP

2 Test To: 192.168.20.101

3 Start

Protocol: udp

Local UDP Tx Size: 1500

Remote UDP Tx Size: 1500

Direction: both

TCP Connection Count: 20

Local Tx Speed: bps

Remote Tx Speed: bps

Random Data: ☐

User: admin

Password:

Lost Packets: 966

Tx/Rx Current: 75.8 Mbps/74.0 Mbps

Tx/Rx 10s Average: 73.2 Mbps/72.3 Mbps

Tx/Rx Total Average: 67.1 Mbps/64.5 Mbps

Tx: 72.9 Mbps

Rx: 72.9 Mbps

running...

PTP & PTMP link Configuration

- Result TCP (PTP) :

admin@E4:8D:8C:D6:B1:D3 (CPE) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)

Session Settings Dashboard

Safe Mode Session: E4:8D:8C:D6:B1:D3

Always Check CPU Percentages As well CPU: 100%

RouterOS WinBox

Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
MPLS
Routing
System
Queues
Files
Log
Radius
Tools
Partition
Make Supout.nf
Manual
New WinBox
Exit

Wireless Tables

Interfaces Nstream Dual Access List Registration Connect List Security Profiles Channels

2- Test TCP

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal ...	Tx Rate	Rx Rate
4C5E0CD...	4C:5E:0C:D4:96:C8	wlan2	00:02:30	yes	yes	0.000	-43/-46	173.3Mbp...	173.3Mbp...

Bandwidth Test (Running)

2 Test To: 192.168.20.101

3

Protocol: ☒ udp ☒ tcp

Local UDP Tx Size: 1500

Remote UDP Tx Size: 1500

Direction: both

TCP Connection Count: 20

Local Tx Speed: bps

Remote Tx Speed: bps

☐ Random Data

User: admin

Password:

Lost Packets: 0

Tx/Rx Current: 79.9 Mbps/54.2 Mbps

Tx/Rx 10s Average: 80.9 Mbps/52.8 Mbps

Tx/Rx Total Average: 79.3 Mbps/51.0 Mbps

Tx: 82.1 Mbps

Rx: 55.3 Mbps

running...

Click on Tools and Select BANDWIDTH TEST

PTP & PTMP link Configuration

- Access Point WDS Configuration Steps (PTMP):

The screenshot displays the RouterOS WinBox interface for configuring WDS on the wlan1 interface. The interface is divided into several panes, with red boxes and numbers highlighting the configuration steps:

- Step 1:** The 'Wireless' tab is selected in the left sidebar.
- Step 2:** The 'wlan1' interface is selected in the 'Interfaces' list.
- Step 3:** The 'General' tab is selected for the 'wlan1' interface. The configuration shows:
 - Mode: ap bridge
 - Band: 5GHz-A/N/AC
 - Channel Width: 20MHz
 - Frequency: 5765
 - SSID: MUM-PAKISTAN
 - Scan List: default
 - Wireless Protocol: any
 - Security Profile: default
 - Bridge Mode: enabled
 - VLAN Mode: no tag
 - VLAN ID: 1
- Step 4:** The 'WDS' tab is selected. The 'Default Authenticate' checkbox is checked, and the 'Default Forward' checkbox is also checked.
- Step 5:** The 'Tx Chains' and 'Rx Chains' are configured to include 'chain0' and 'chain1'.
- Step 6:** The 'WDS Mode' is set to 'dynamic' and the 'WDS Default Bridge' is set to 'bridge1'.
- Step 7:** The 'Apply' button is clicked to save the configuration.

PTP & PTMP link Configuration

- StationWDS - 1 Configuration Steps (PTMP):

admin@E4:8D:8C:D6:B1:D3 (CPE) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)

Session Settings Dashboard

Safe Mode Session: E4:8D:8C:D6:B1:D3

RouterOS WinBox

Quick Set
CAPsMAN
Interface
Wireless
Bridge
PPP
Switch
Mesh
IP
MPLS
Routing
System
Queues
Files
Log
Radius
Tools
New Terminal
MetaROUTER
Partition
Make Supout.tif
Manual
New WinBox
Exit

Wireless Tables

Name	Type	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)
wlan1	Wireless (Atheros AR9300)	0 bps	0 bps	0	0
wlan2	Wireless (Atheros AR9888)	0 bps	0 bps	0	0

Interface <wlan2>

General Wireless HT WDS Nstreme NV2 Advanced Status ...

Mode: station wds
Band: 5GHz-A/N/AC
Channel Width: 20MHz
Frequency: auto MHz
SSID: MUM-PAKISTAN
Scan List: default
Wireless Protocol: any
Security Profile: default
WPS Mode: push button
Bridge Mode: enabled
VLAN Mode: no tag
VLAN ID: 1

Default AP Tx Rate: bps
Default Client Tx Rate: bps

☒ Default Authenticate
☒ Default Forward

Interface <wlan1>

Wireless HT HT MCS WDS Nstreme NV2 Status Advanced Status ...

Tx Chains: ☒ chain0 ☒ chain1
Rx Chains: ☒ chain0 ☒ chain1

AMSDU Limit: 8192
AMSDU Threshold: 8192
Guard Interval: any
AMPDU Priorities: ☒ 0 ☐ 1 ☐ 2 ☐ 3
☐ 4 ☐ 5 ☐ 6 ☐ 7

OK
Cancel
Apply
Disable
Comment
Advanced Mode
Torch
WPS Accept
Scan...
Freq. Usage...
Align...
Sniff...
Snooper...
Reset Configuration

OK
Cancel
Apply
Advanced M
Torch
WPS Acco
Scan...
Freq. Usag
Align...
Sniff...
Snooper.
Reset Config

PTP & PTMP link Configuration

- Station WDS - 2 Configuration Steps (PTMP):

admin@E4:8D:8C:D6:B2:0C (CPE 2) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)

Session Settings Dashboard

Safe Mode Session: E4:8D:8C:D6:B2:0C

RouterOS WinBox

1 Bridge

2 wlan2

3 Mode: station wds

4 ☒ Default Authenticate

5 Tx Chains: ☒ chain0 ☒ chain1

6 Apply

Wireless Tables

Name	Type	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP T2
X wlan1	Wireless (Atheros AR9...	0 bps	0 bps	0	0	0
RS wlan2	Wireless (Atheros AR9...	5.6 kbps	0 bps	9	0	0

Interface <wlan2>

General Wireless HT WDS Nstreme NV2 Advanced Status ...

Mode: station wds

Band: 5GHz-A/N/AC

Channel Width: 20MHz

Frequency: auto MHz

SSID: MUM-PAKISTAN

Scan List: default

Wireless Protocol: any

Security Profile: default

WPS Mode: push button

Bridge Mode: enabled

VLAN Mode: no tag

VLAN ID: 1

Default AP Tx Rate: bps

Default Client Tx Rate: bps

☒ Default Authenticate

☒ Default Forward

Interface <wlan1>

Wireless HT HT MCS WDS Nstreme NV2 Status Advanced Status ...

Tx Chains: ☒ chain0 ☒ chain1

Rx Chains: ☒ chain0 ☒ chain1

AMSDU Limit: 8192

AMSDU Threshold: 8192

Guard Interval: any

AMPDU Priorities: ☒ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

PTP & PTMP link Configuration

- Result UDP (PTMP) Both Stations:

min@E4:8D:8C:D6:B1:D3 (CPE) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)

on Settings Dashboard

Safe Mode Session: E4:8D:8C:D6:B1:D3

CPU:24%

Station 1 - Test UDP

Wireless Tables

Interfaces Nstream Dual Access List Channels

Radio Name / MAC Address Interface Uptime AP W... Last Activit... Tx/Rx Sig

4C5E0CD... 4C:5E:0C:D4:96:C8 wlan2 00:07:39 yes yes 0.010 -41/-43

Bandwidth Test (Running)

2 Test To: 192.168.20.101 Start

Protocol: udp tcp Stop

Local UDP Tx Size: 1500

Remote UDP Tx Size: 1500

Direction: both

TCP Connection Count: 20

Local Tx Speed: bps

Remote Tx Speed: bps

Random Data

User: admin Password:

Lost Packets: 153

Tx/Rx Current: 42.5 Mbps/21.5 Mbps

Tx/Rx 10s Average: 44.8 Mbps/17.8 Mbps

Tx/Rx Total Average: 43.3 Mbps/17.9 Mbps

running...

Click on Tools and Select BANDWIDTH TEST

OC (CPE 2) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)

oard

CPU:18%

Station 2 - Test UDP

Wireless Tables

Interfaces Nstream Dual Access List Registrat

Radio Name / MAC Address Interface Uptime AP W... Last Activit... Tx/Rx Sig

4C5E0CD... 4C:5E:0C:D4:96:C8 wlan2 00:01:50 yes yes 0.010 -39/-42

Bandwidth Test (Running)

2 Test To: 192.168.20.101 Start

Protocol: udp tcp Stop

Local UDP Tx Size: 1500

Remote UDP Tx Size: 1500

Direction: both

TCP Connection Count: 20

Local Tx Speed: bps

Remote Tx Speed: bps

Random Data

User: admin Password:

Lost Packets: 343

Tx/Rx Current: 49.0 Mbps/18.8 Mbps

Tx/Rx 10s Average: 49.7 Mbps/19.0 Mbps

Tx/Rx Total Average: 42.1 Mbps/19.8 Mbps

running...

Always Check CPU Percentage As Well

PTP & PTMP link Configuration

- Result TCP (PTMP) Both Stations:

Station 1 - Test TCP

Station 2 - Test TCP

Click on Tools and Select BANDWIDTH TEST

Always Check CPU Percentage As Well

Bandwidth Test (Running)

Test To: 192.168.20.101

Protocol: ☒ tcp

Local UDP Tx Size: 1500

Remote UDP Tx Size: 1500

Direction: both

TCP Connection Count: 20

Local Tx Speed: bps

Remote Tx Speed: bps

☐ Random Data

User: admin

Password:

Lost Packets: 0

Tx/Rx Current: 28.4 Mbps/20.1 Mbps

Tx/Rx 10s Average: 28.3 Mbps/22.4 Mbps

Tx/Rx Total Average: 21.4 Mbps/20.4 Mbps

Tx: 20.1 Mbps

Rx: 28.4 Mbps

running...

Bandwidth Test (Running)

Test To: 192.168.20.101

Protocol: ☒ tcp

Local UDP Tx Size: 1500

Remote UDP Tx Size: 1500

Direction: both

TCP Connection Count: 20

Local Tx Speed: bps

Remote Tx Speed: bps

☐ Random Data

User: admin

Password:

Lost Packets: 0

Tx/Rx Current: 30.1 Mbps/21.5 Mbps

Tx/Rx 10s Average: 28.9 Mbps/17.4 Mbps

Tx/Rx Total Average: 23.2 Mbps/15.2 Mbps

Tx: 21.5 Mbps

Rx: 30.1 Mbps

running...

Access List & Connect List

Access List

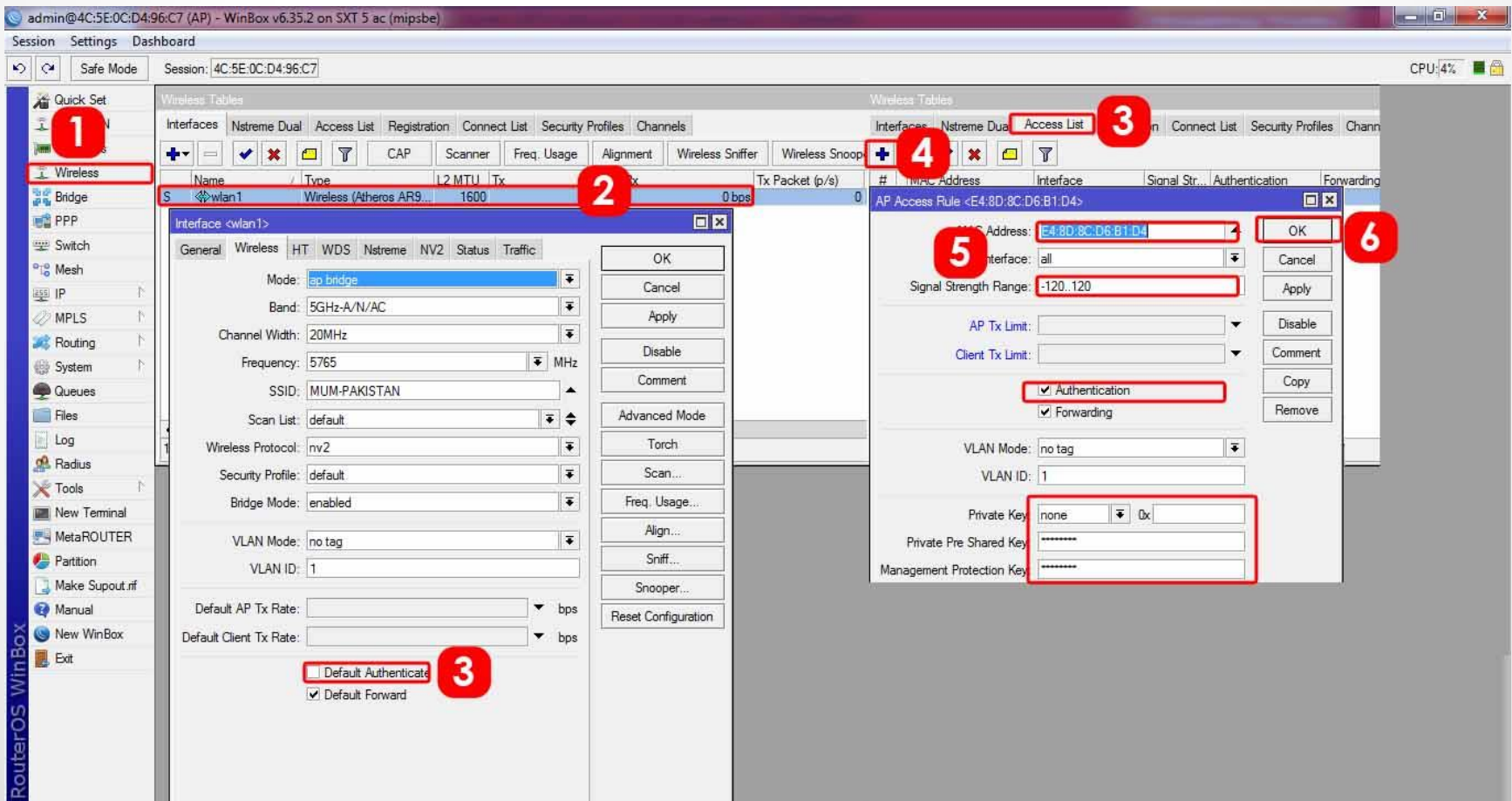
- Access list is used by access point to restrict allowed connections from other devices, and to control connection parameters.
- Access List is use in Access Point

Connect List

- Connect List is used to assign priority and security settings to connections with remote access points and to restrict allowed connections.
- Connect List is use in Station

Access List

- How to Enable Access List on Mikrotik Wireless Access Point



Access List

- Result:
 - Now Check on Wireless Registration Table, You will Find your Station Device

The screenshot displays the RouterOS WinBox interface. On the left sidebar, the 'Wireless' menu item is highlighted with a red circle and the number '1'. In the main window, the 'Registration' tab is selected, also marked with a red circle and the number '2'. The 'Wireless Tables' section shows a table with one entry:

Radio Name	MAC Address	Interface	Uptime	AP	WDS	Last Activ	Tx/Rx Signal	Tx Rate	Rx Rate
E48D8CD6B1D4	E4:8D:8C:D6:B1:D4	wlan1	00:04:20	no	yes		0.000 -40/-38	173.3Mbps...	6Mbps

Below the table, it indicates '1 item'. An 'AP Access Rule <E4:8D:8C:D6:B1:D4>' dialog box is open in the foreground, showing the configuration for the selected MAC address. The 'MAC Address' field is highlighted with a red box. The configuration includes:

- MAC Address: E4:8D:8C:D6:B1:D4
- Interface: all
- Signal Strength Range: -120..120
- AP Tx Limit: (empty)
- Client Tx Limit: (empty)
- ☒ Authentication
- ☒ Forwarding
- VLAN Mode: no tag
- VLAN ID: 1
- Private Key: none
- Private Pre Shared Key: (empty)
- Management Protection Key: (empty)
- Time: enabled

Connect List

- How to Enable Connect List on MikroTik Wireless Station

The screenshot shows the MikroTik WinBox interface with the following steps highlighted:

- 1**: Click on the **Wireless** menu in the left sidebar.
- 2**: Select the **Connect List** tab in the **Wireless Tables** window.
- 3**: In the **Interface <wlan2>** window, set the **Mode** to **station wds**.
- 4**: Click on the **Connect List** tab in the **Wireless Tables** window.
- 5**: Click the **+** button to add a new station connect rule.
- 6**: In the **Station Connect Rule <E4:8D:8C:D6:B1:D4>** window, set the **Interface** to **wlan1** and the **MAC Address** to **E4:8D:8C:D6:B1:D4**.
- 7**: Check the **Connect** checkbox in the **Station Connect Rule** window.
- 8**: Click the **OK** button in the **Station Connect Rule** window.
- 9**: In the **Station Connect Rule <4C:5E:0C:D4:96:C8>** window, set the **Interface** to **wlan1** and the **MAC Address** to **4C:5E:0C:D4:96:C8**.
- 10**: Check the **Connect** checkbox in the **Station Connect Rule** window.

Connect List

- Result:
 - Now Check on Wireless Registration Table, You will Find your Access Point Device. So which Access Point is Showing there switch off that one. Your Station Will Connect from Other AP.

The image displays two screenshots of the WinBox v6.35.2 interface, specifically the 'Wireless Tables' section, showing the 'Registration' tab. The interface is titled 'admin@E4:8D:8C:D6:B2:0C (CPE) - WinBox v6.35.2 on SXT Lite5 ac (mipsbe)'. The 'Session' is 'E4:8D:8C:D6:B2:0C' and the 'Safe Mode' is 'Safe Mode'. The 'Time' is '00:47:24' and 'CPU' is '0%'. The 'Wireless Tables' window shows a table with columns: Radio Name, MAC Address, Interface, Uptime, AP, W..., Last Activit..., Tx/Rx Signal..., Tx Rate, and Rx Rate. The table contains one item in each screenshot.

Screenshot 1: The table shows one item with the following details:

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal...	Tx Rate	Rx Rate
E48D8CD6B1D4	E4:8D:8C:D6:B1:D4	wlan2	00:05:20	yes	yes	0.000	-47/-49	173.3Mbps...	173.3Mbps...

Screenshot 2: The table shows one item with the following details:

Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Tx/Rx Signal...	Tx Rate	Rx Rate
4C5E0CD496C8	4C:5E:0C:D4:96:C8	wlan2	00:00:02	yes	yes	0.000	-60	6Mbps	144.4Mbps...

Basic Features

- Scan
- Frequency Usage
- Snooper

Basic Feature

- Scan
 - Scan command allows to see available AP in the frequency range defined in the scan-list.

The screenshot displays the MikroTik WinBox v6.34.2 interface. The main window is the 'Interface <wlan1>' configuration page, with the 'Wireless' tab selected. The configuration includes fields for Mode (station), Band (2GHz-B/G), Channel Width (20MHz), Frequency (2412 MHz), SSID (MikroTik), Scan List (default), Wireless Protocol (any), Security Profile (default), WPS Mode (push button), Bridge Mode (enabled), VLAN Mode (no tag), and VLAN ID (1). There are also fields for Default AP Tx Rate and Default Client Tx Rate, both set to 0 bps. Checkboxes for 'Default Authenticate' and 'Default Forward' are checked. A 'Scanner (Running)' window is open in the foreground, showing a list of detected wireless networks.

Scanner (Running) Interface: wlan1

	Address	SSID	Channel	Signal	Noise	Signal	Radio Name	Router
ARB	4C:5E:0C:0B:36:3D	MikroTik...	2412/2...	-24	-115	91	4C5E0C0B363D	6.30.4
A	A0:F3:C1:81:F2:D6	Mamott...	2412/2...	-88	-115	27		
A	E8:94:F6:29:48:9A	Mamott...	2412/2...	-86	-115	29		
A	9C:AD:97:2B:A6:FE	HP-Print...	2412/2...	-79	-115	36		
ARB	E4:8D:8C:B3:06:19	MikroTik...	2422/2...	-42	-115	73	E48D8C830619	6.30.4
APRB	E4:8D:8C:53:78:87	Mamott...	2422/2...	-72	-115	43	E48D8C537887	6.33.5
A	64:70:02:F9:34:B4	Mamott...	2427/2...	-88	-115	27		
A	64:70:02:6C:37:E0	Mamott...	2437/2...	-79	-114	35		
A	90:F6:52:2A:0A:26	Mamott...	2442/2...	-91	-114	23		
A	54:E6:FC:9A:41:80	Mamott...	2452/2...	-71	-114	43		
AP	50:68:0A:E6:3A:85	Khattak ...	2462/2...	-82	-114	32		
A	A0:F3:C1:D4:0D:A6	Mamott...	2462/2...	-89	-114	25		
A	E8:DE:27:25:3A:A6	Mamott...	2447/2...	-93	-114	21		
A	64:70:02:6C:49:A8	Board Ro...	2412/2...	-90	-115	25		
	00:18:F8:4A:E3:74	Mamott...	2442/2...	-91	-114	23		

17 items

Basic Feature

- Frequency Usage
 - This tool shows you that usage of frequency.

The screenshot displays the MikroTik WinBox interface. The main window is titled 'Interface <wlan1>' and shows the 'General' tab. The configuration includes:

- Mode: station
- Band: 2GHz-B/G
- Channel Width: 20MHz
- Frequency: 2412 MHz
- SSID: MikroTik
- Scan List: default
- Wireless Protocol: any
- Security Profile: default
- WPS Mode: push button
- Bridge Mode: enabled
- VLAN Mode: no tag
- VLAN ID: 1
- Default AP Tx Rate: [empty] bps
- Default Client Tx Rate: [empty] bps
- ☒ Default Authenticate
- ☒ Default Forward

On the right side of the 'Interface <wlan1>' window, there are buttons for OK, Cancel, Apply, Disable, Comment, Advanced Mode, Torch, WPS Accept, Scan..., Freq. Usage..., Align..., Sniff..., Sniffer..., and Reset Configuration.

In the background, the 'Freq. Usage (Running)' window is visible, showing a table of frequency usage for the 'wlan1' interface. The table has columns for Frequency (MHz), Usage, and Noise Floor (dBm).

Frequency (MHz)	Usage	Noise F...
2412	15.2	-114
2417	9.8	-114
2422	12.2	-115
2427	15.6	-115
2432	14.9	-115
2437	21.5	-115
2442	13.0	-114
2447	9.8	-114
2452	7.6	-114
2457	3.7	-114
2462	18.9	-115

The 'Freq. Usage (Running)' window also includes buttons for Start, Stop, Close, and New Window, and a status bar indicating '11 items'.

Basic Feature

- Snooper
 - This tool monitors surrounding frequency usage, and displays which devices occupy each frequency. It's available both in console, and also in Winbox.

The screenshot displays the Mikrotik WinBox interface. The left sidebar shows the 'RouterOS WinBox' menu with options like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, MPLS, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, MetaROUTER, Partition, Make Supout.rtf, Manual, New WinBox, and Exit.

The main window shows the 'Interface <wlan1>' configuration page. The 'General' tab is active, displaying settings for Mode (station), Band (2GHz-B/G), Channel Width (20MHz), Frequency (2412 MHz), SSID (MikroTik), Scan List (default), Wireless Protocol (any), Security Profile (default), WPS Mode (push button), Bridge Mode (enabled), VLAN Mode (no tag), and VLAN ID (1). The 'Advanced' tab is also visible, showing Default AP Tx Rate and Default Client Tx Rate.

Overlaid on the configuration window is the 'Wireless Snooper (Running)' tool. It shows a table of detected wireless networks. The table has columns for Channel, Address, SSID, Signal, Of Freq. (%), Of Traf. (%), Bandwidth, Networks, and Stations. The table lists several networks, including those from Marriott and other sources, with their respective signal strengths and bandwidths.

Channel	Address	SSID	Signal	Of Freq. (%)	Of Traf. (%)	Bandwidth	Networks	Stations
2427/2...				30.2		251.4 kbps	1	5
2452/2...				18.0		249.7 kbps	1	5
2452/2...	54:E6:FC:9A:41:80	Marriott_B...		5.7	31.6	222.2 kbps		3
2452/2...	54:E6:FC:9A:41:80	Marriott_B...		5.7	31.6	222.2 kbps		
2412/2...				21.1		195.6 kbps	6	17
2437/2...	64:70:02:6C:37:E0	Marriott_G...		1.3		101.9 kbps		4
2437/2...	64:70:02:6C:37:E0	Marriott_G...		5.7		123.3 kbps	1	5
2437/2...	64:70:02:6C:37:E0	Marriott_G...	-71	1.1	19.8	101.3 kbps		
2417/2...				11.0		83.2 kbps	1	2
2457/2...				12.1		81.5 kbps	0	1
2412/2...	A0:F3:C1:81:F2:D6	Marriott_G...		2.4	11.6	79.5 kbps		2
2412/2...	A0:F3:C1:81:F2:D6	Marriott_G...		2.4	11.6	79.5 kbps		
2412/2...	E8:94:F6:29:48:9A	Marriott_P...		1.3	6.3	66.1 kbps		7
2412/2...	E8:94:F6:29:48:9A	Marriott_P...	-87	1.3	6.3	66.1 kbps		
2462/2...				9.3		59.0 kbps	2	12

