

The simplest way to connect to a WANRouter remotely is through use of the Winbox software, which is a GUI interface made to communicate with the Router OS. The following are instructions on how to use Winbox to set up your new WANRouter point to point links.

### Getting Winbox

Once a WANRouter device is powered on and connected to your network you can access a web interface on the device by opening your web browser and typing <http://xxx.xxx.xxx.xxx> where the x's are the IP Address of your WANRouter device. (The pre-configured IP addresses of your devices can be found on the sheet shipped with the DCEs.) Once you are in the web interface you will see a "GUI" link. Visit this link to download Winbox.

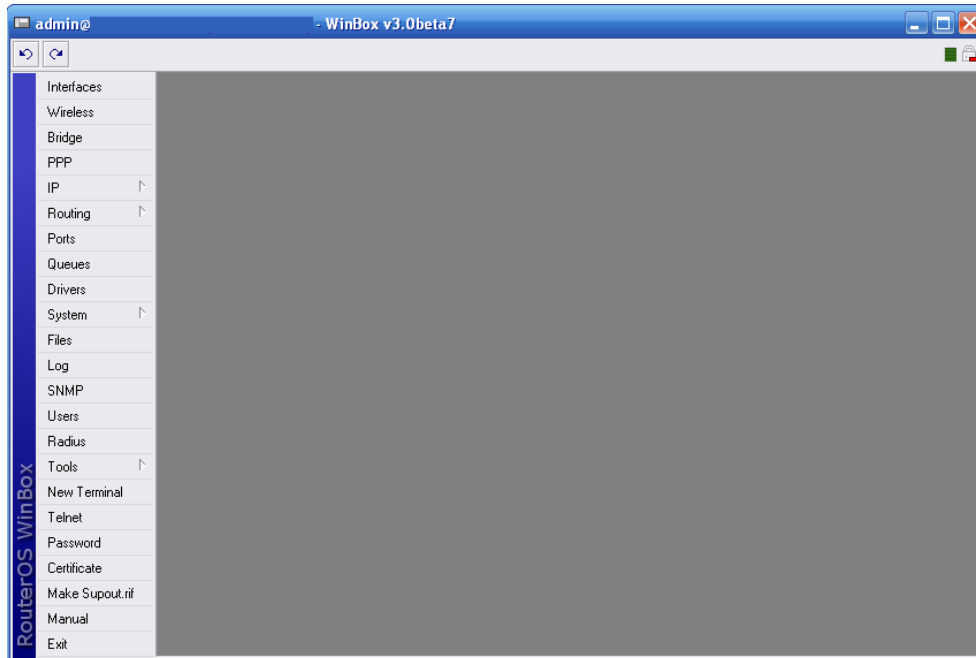
### Connecting to your device with Winbox

Upon opening the Winbox program you will see this window:



In the 'Connect To:' box you will enter the IP Address of the WANRouter device. By default the login user is 'admin' with no password. Alternatively, if connected to the device directly you are able to click the ellipses to discover the device by MAC and connect.

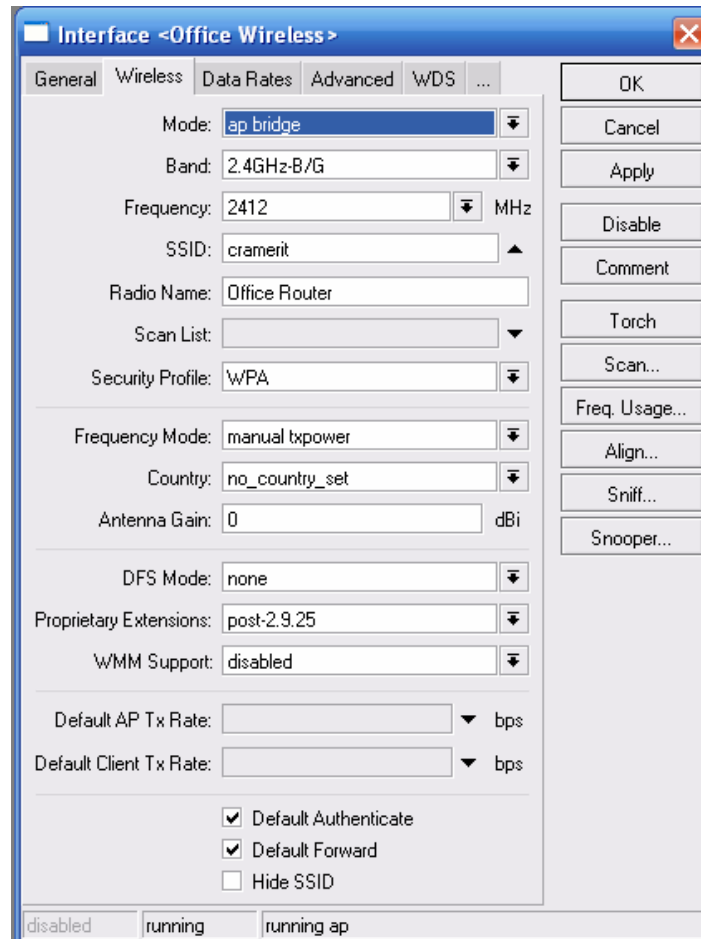
This will connect you to the device and bring up the GUI window which looks like the following:



From here you will have access to everything that the Router OS does. For an explanation of all the RouterOS basics refer to the WANRouter Manual on ISPBrain.com. The rest of this guide will discuss some of the basics of using wireless devices on a WANRouter.

## Viewing Wireless Interfaces

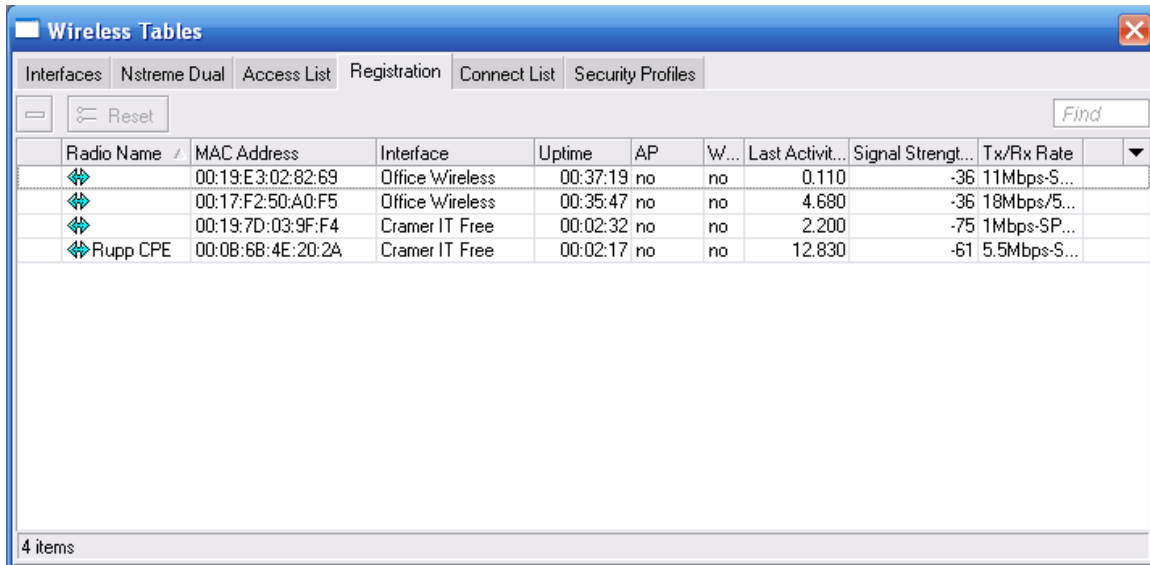
Clicking on the wireless button will display the main window for managing your WANRouter's wireless connections. The interfaces tab will display the physical wireless cards installed in your particular WANRouter. Double clicking on the card will bring up the configuration window for that card:



From here you will be able to set the specifics of what the card will be running, such as mode (AP, station, etc.), band, frequency, and SSID. This is also where you would set the security for this device. Security profiles can be added by going back to the wireless window and selecting the 'Security Profiles' tab. Once added they can then be selected for use by the wireless interface.

## Viewing Connected Devices

The registration tab in the wireless window is where you will be able to see what devices the current WANRouter is connected to:



The screenshot shows a window titled "Wireless Tables" with a tabbed interface. The "Registration" tab is selected. The table below lists four connected devices with their respective details.

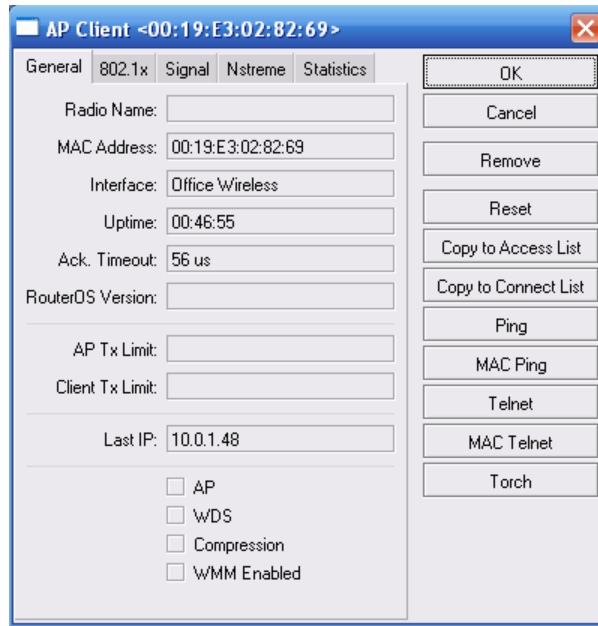
Radio Name	MAC Address	Interface	Uptime	AP	W...	Last Activit...	Signal Strengt...	Tx/Rx Rate
	00:19:E3:02:82:69	Office Wireless	00:37:19	no	no	0.110	-36	11Mbps-S...
	00:17:F2:50:A0:F5	Office Wireless	00:35:47	no	no	4.680	-36	18Mbps/5...
	00:19:7D:03:9F:F4	Cramer IT Free	00:02:32	no	no	2.200	-75	1Mbps-SP...
Rupp CPE	00:0B:6B:4E:20:2A	Cramer IT Free	00:02:17	no	no	12.830	-61	5.5Mbps-S...

4 items

They will show up whether they are an AP or a client. Here you will be able to see the name of the device (if it is a device with RouterOS installed), the MAC address, interface (or card) it is connected to in your device, the uptime, signal strength, and data rates each device is currently connected at. For point to point WANRouter setups the devices should already be configured to connect the the AP or client of their set once they are powered on. As soon as they are connected they will show up in this window. If there is no device shown in the window that means they are not aimed properly or the signal strength between is not strong enough to make a connection.

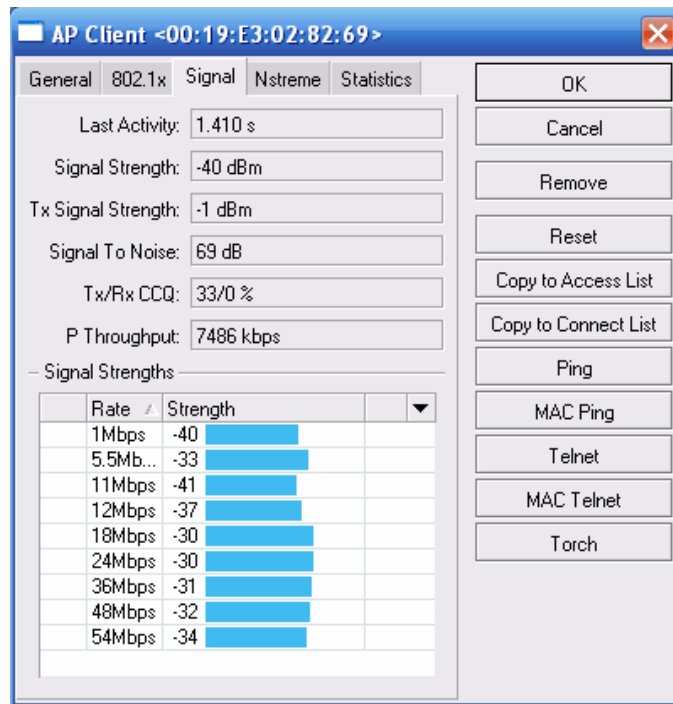
## Aiming your WANRouter PTP Link

A great way to aim your point to point links is by first getting the devices connected wirelessly, and then looking at the specific information for the connected device in the registration. To look at a detailed view of the link you can double click a connection to bring up the following window:



This will give you a more detailed look at the connection as well as a few more utilities to use with the connection such as pings and telnet services to the connected device or torch, which will allow you to view traffic going through the link.

For aiming it is especially useful to look at the signal tab:



This will give you more specifics on the actual physical link between the two devices. As you aim your antennas you can look at the signal strength and TX signal strength and aim them so that both sides are as strong as they can possibly be.

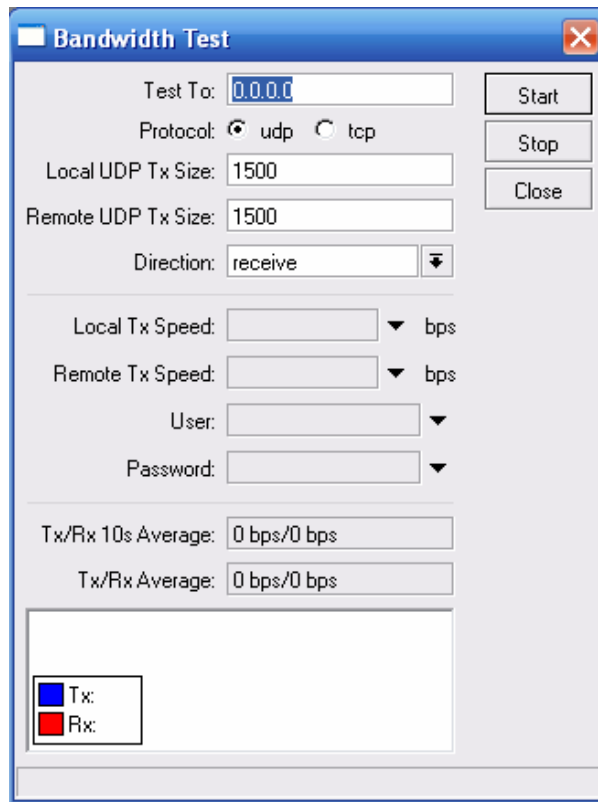
Other things to look at would be the Signal To Noise and the CCQ.

Signal To Noise is a measure of how far above the noise floor your device is. We recommend having a device at least 10 dB above the noise floor to ensure a stable link.

CCQ stands for Client Connection Quality and measures a value in percent that shows how effective the bandwidth is used regarding the theoretically maximum available bandwidth. It mostly depends on the amount of retransmitted frames between the devices. You will most likely want to look at this only after traffic is actually passing through the link as it will be a more reliable reading than looking at the link while it is not in use.

## Testing the link

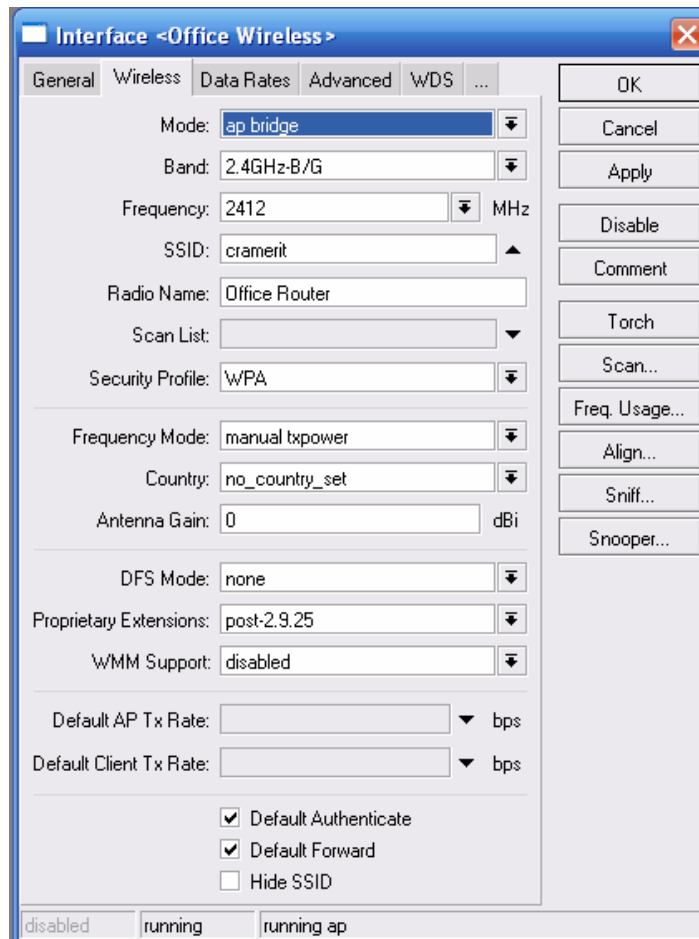
We have found that the best way to test a new link is by doing a bandwidth test between the two points. Bandwidth Test can be found by opening Winbox and going to Tools -> Bandwidth Test, which will open the following window:



In the 'Test To:' box you would put the IP of the device on the other end of the link. This test will only work between RouterOS devices and the connection will only be made

when the correct user and password for the device you are connecting to are entered in. Once you have the test running you can change which protocol the traffic you are testing is using as well as the direction (send, receive, or both) and the size of packets going through. This should be a good indication of what kind of bandwidth you will be able to push through the link once in its current state.

If the results you are getting are not as good as you think they should be the things to try would be first making sure that you have aimed the antennas the best that you possibly can. After that if the link still looks like it is performing under par you could try taking a look at the CCQ and Signal to Noise. If either of these are low you may want to think about looking at the frequency the AP is running in.



When changing the frequency you will only need to look at the wireless interface properties of the AP since the Client device will automatically scan to find what frequency the AP is running in.

The first thing you will want to look at is making sure the frequency your AP is set to does not interfere with any other APs on your network. If that is okay and you still wish to change frequencies you can take a look at the frequency usage utility which is started by clicking the 'Freq. Usage...' button on the right.

Frequency (MHz)	Usage
2412	0.3
2417	2.0
2422	0.0
2427	0.7
2432	1.4
2437	1.9
2442	1.3
2447	1.1
2452	0.2
2457	1.5
2462	1.3

Click start to begin running the utility (Note that any devices connected to that interface will drop off while this utility is running). This will scan the band your AP is set to use and give an indication of which frequencies are in use. An ideal frequency would be one which is not in use at all and has the lowest noise floor.