WHAT IS MIKROTIK

Mikrotik, is a Latvian manufacturer of computer networking equipment. It sells wireless products and routers. The company was founded in 1996, with the intent to sell in the emerging wireless technology market. As of 2015, the company has more than 160 employees. The company's products are known for being low-priced alternatives to expensive routers and Ethernet radio relay lines.

WINBOX-B

Winbox is a configuration tool to access the interface of router. It can be connected via MAC or IP protocol. Latest winbox version can be downloaded here . Enter "admin" as username click connect (there is no initial password).

WHY DO WE USE IT-B

There is no limitation with Mikrotik unlike other routers. You can manage all your settings, block users, websites. It is highly configurable. Its price, community, manufacturer support and the interface winbox are the features that makes it unique.

CONFIGURATION

Firstly, it should be decided which configuration type to use.

1) **CAP**: Controlled Access Point, an AP device, that will be managed by a centralized Caps MAN server. Only use if you have already set up a Caps MAN server.
2) **CPE**: Client device, which will connect to an Access Point (AP) device. Provides option to scan for AP devices in your area.
3) **Home AP**: The default Access Point config page for most home users. Provides less options and simplified terminology.
4) **HomeAP dual**: Dual band devices (2GHz/5GHz). The default Access Point config page for most home users. Provides less options and simplified terminology.
5) **PTP Bridge AP**: When you need to transparently interconnect two remote locations together in the same network, set one device to this mode, and the other device to the next (PTP Bridge CPE) mode.
6) **PTP Bridge CPE**: When you need to transparently interconnect two remote locations together in the same network, set one device to this mode, and the other device to the previous (PTP Bridge AP) mode.
7) **WISP AP**: Like the Home AP mode, but provides more advanced options and uses industry standard terminology, like SSID and WPA.

As an example, to configure the router board as a HomeAp, click Automatic button (it may change from country to country according to the internet access then click PPPOE) to set address acquisition. Then set up address to the local network to be available on the local or global network. After that arrange network mask, select DHCP Server and NAT to divide an IP address into subnets and specify the network's available hosts. Finally, click Apply.

After configuration it is good to check whether the Wlan1 is available or not on interfaces. Also, security profile can be added to Wlan1 but not a must in that stage. To do that check Wireless and click on Wlan1.

3G/4G Configuration

Some of the Mikrotik models (such as RB953GS-5HnT) allow you to turn your router into modem that receives data from GSM services. To activate it, first you need to check if your router is capable, and then you need to check if your modems on router is compatible with your router. Check this page to see compatible modems. After that you can create either LTE or PPP Client interface to manage your setting. After choosing the right interface you can click on it a change the settings. You can also setup your modem by customizing the command line below. You might want to change interface name, port number etc.

Step 1 - Configuring the LTE Modem

```
/system router board usb set type=mini-PCIe
/interface ppp-client
set ppp-out1 data-channel=2 disabled=no info-channel=0 port=usb1
/ip firewall nat
add action=masquerade chain=srcnat out-interface=ppp-out1
/ip dns
set allow-remote-requests=yes servers=8.8.8.8
```

Step 2 - Configure ether1 as the internal LAN:

```
/ip pool
add name=dhcp_pool1 ranges=192.168.1.2-192.168.1.254
/ip dhcp-server
add address-pool=dhcp_pool1 disabled=no interface=ether1 lease-time=3d
name=dhcp1
/ip address
add address=192.168.1.1/24 interface=ether1 network=192.168.1.0
/ip dhcp-server network
add address=192.168.1.0/24 gateway=192.168.1.1
```

USB SETTING-B

Click on System-> Routerboard-> USB on winbox to choose which port you want to use. For instance, if you have plugged in an USB device, you might want to leave it as **USB** but if you want to use Mini PCI express cards on router as your modem, choose **Mini PCIe**.

BRİDGE

A bridge is a type of computer network device that provides interconnection with other bridge networks that use the same protocol. Bridge devices work at the data link layer of the Open System Interconnect (OSI) model, connecting two different networks together and providing

communication between them. Bridges are like repeaters and hubs in that they broadcast data to every node. However, bridges maintain the media access control (MAC) address table as soon as they discover new segments, so subsequent transmissions are sent to only to the desired recipient. Bridges are also known as Layer 2 switches.

Firstly, add a bridge on bridge interface. After that, add a port for every interface which will be in that bridge and finally, choose the bridge name on port interface to understand which bridge they are linked to.

What is DHCP and DHCP Settings

Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.
In the first step, add a pool which consists of which IP range the clients may take. After that, add a DHCP Server and activate the buttons: Bootp Support, Add ARP and always broadcast and change address pool to which address pool you add.
Finally add a DHCP Network (Address, Gateway, Netmask, DNS servers) according to Ip address in your configuration.

RESET-B

Mikrotik router board has several reset functions in case you mess things up.

- **Loading the backup Router BOOT loader**
- Hold this button before applying power, release after three seconds since powering, to load backup Boot loader. This might be necessary if the device is not operation because of a failed Router BOOT upgrade. When you have started the device with the backup loader, you can either set RouterOS to *force backup loader* in the Router BOARD settings, or have a chance to reinstall the failed Router BOOT from a fwf file (total **3 seconds**)
- **Resetting the RouterOS configuration**
- If you keep holding this button for 2 more seconds until LED light starts flashing, release the button to reset RouterOS configuration (total **5 seconds**)
- **Enabling CAPs mode**
- To connect this device to a wireless network managed by Caps MAN, keep holding the button for 5 more seconds, LED turns solid, release now to turn on CAPs mode (total **10 seconds**)
- **Starting the Router BOARD in Net install mode**
- Or Keep holding the button for 5 more seconds until LED turns off, then release it to make the Router BOARD look for Net install servers. You can also simply keep the button pressed until the device shows up in the Net install program on Windows (total **15 seconds**)

PING-B

Ping is a tool that you can choose to see if the remote host is active or inactive and to determine the round-trip delay when communicating with it. Ping tool can be used to ping IP address and mac address. Mac ping works only to devices that has mac ping server configured.

Go Tools->Ping on winbox and choose where do you want to ping to then click start.

CONSOLE

The console is used for accessing the Mikrotik Router's configuration and management features using text terminals, either remotely using serial port, telnet, SSH or console screen within Winbox, or directly using monitor and keyboard. The console is also used for writing scripts. This manual describes the general console operation principles. Please consult the Scripting Manual on some advanced console commands and on how to write scripts. Click here for more information.

WHAT IS SFP INTERFACE

Sfp interface is an interface for gigabit ethernet with generally two slots.
Sfp ports has an advantage compared to ether ports because these ports can connect gigabit ethernet. (click here to check for your device)

DSL PPPOE

Also, Mikrotik can access internet via adsl ethernet by adding PPPoE username and password. Click here