



## Mikrotik Wireless System Network Setup

By Caryn Zacharias

For customers looking to set up their own wireless network. You can use 2 or more units to communicate and see information between vessels and equipment. This document explains the equipment needed to create this network and how to configure it. HYPACK has and still uses Ubiquiti Bullets. However, some of our users are not allowed to purchase the Ubiquiti units due the China being the country of origin. The Mikrotik units are made in Latvia and checks the purchase approval box for those customers.

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### **PARTS**

- Mikrotik: GrooveA 25ac
- Antenna
- POE (Power over ethernet)
- Power adapter
- Ethernet cable

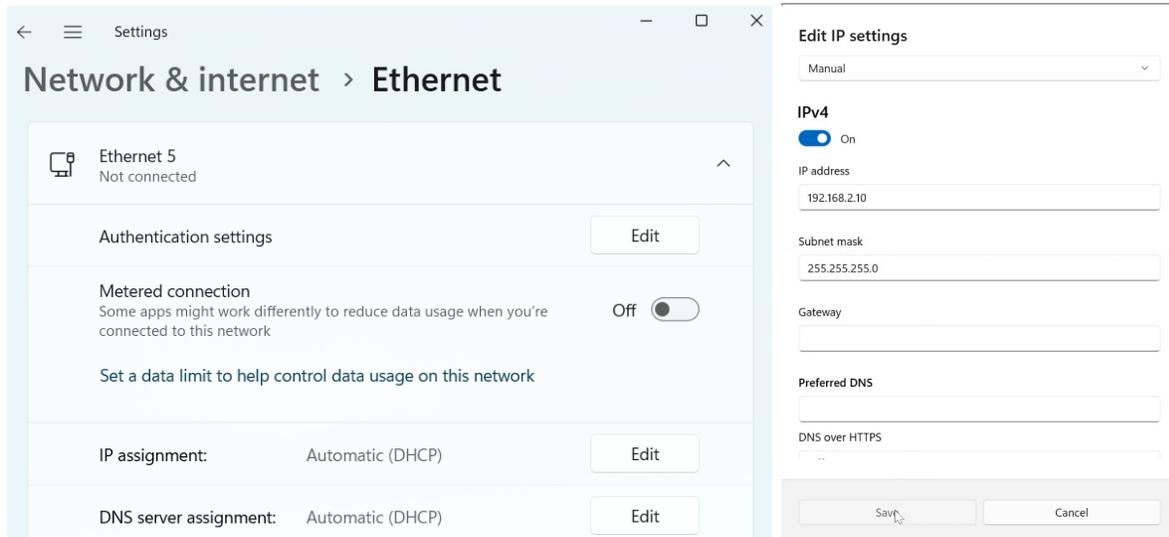


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### **COMPUTER SETUP**

IP Address - the ethernet connection on the computer must be set to a static IP. It does not matter what IP is entered, it just cannot be set to a dynamic IP address. If you need to check this or change it, go to your Network & Internet settings on your computer. If Automatic

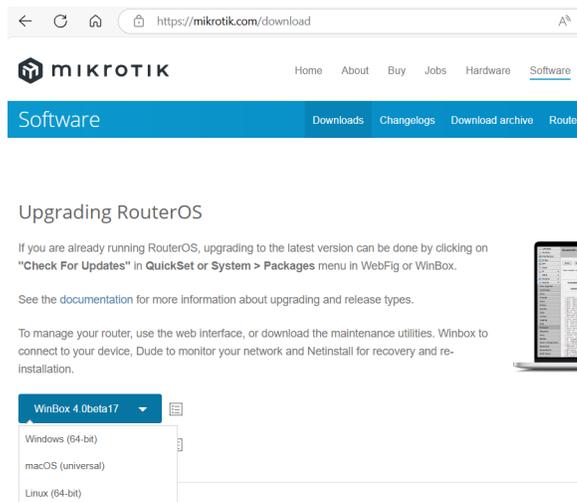
(DHCP) is showing as seen in the image below, you must click on edit to change this to manual and enter an IP address of your choice. (Example: 192.168.2.10)



## SOFTWARE FOR INITIAL CONNECTION AND SETUP FOR EACH UNIT

Download Router OS - WinBox

1. Go to: <https://mikrotik.com/download>
2. Click WinBoxXX dropdown arrow and choose your operating system (At the time of this write up, WinBox 4.0 beta17 was downloaded. I have listed WinBoxXX since there have been updates and newer versions are available for download).



3. Extract the download to a folder on your computer. Since it is a standalone program, it does not run through an installation wizard to be installed. The file just needs to be unzipped. (Right click on the WinBox\_Windows.zip and choose Extract All...)
4. Go to where you have extracted the files and double click on the WinBox.exe file to open the Program.

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## CONNECT THE PARTS

5. Screw the Antenna on to the GrooveA unit.
6. Plug the ethernet cable into the bottom of the GrooveA unit. Screw the end cap on and push the grey watertight piece into the opening with the ethernet cable.
7. Plug the Ethernet cable into the POE
8. Plug the POE Ethernet into the Computer
9. Plug the POE into a Power Source.



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## WHAT TO EXPECT

When the unit has power, it will beep and light up.

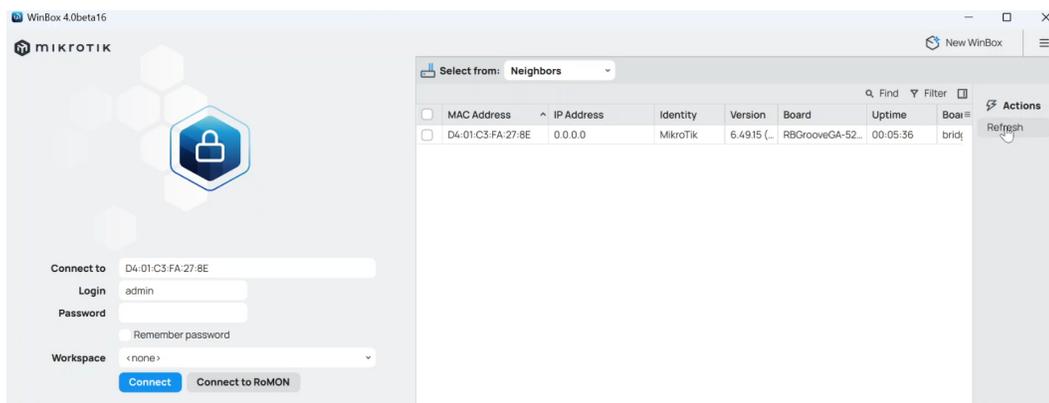


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## CONFIGURING ACCESS POINT UNIT ("THE MASTER")

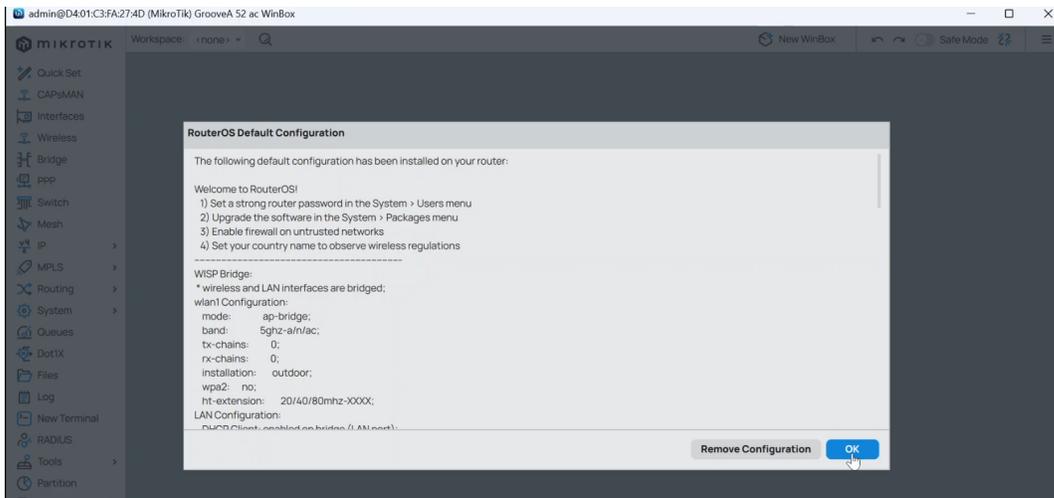
After the unit is connected, it is time to configure the Access Point (AP) unit. Go to where you extracted the WinBox.exe.

10. Double click on the WinBox.exe file to open the Program. Any unit connected will be displayed in the list.
11. Select the unit from the list on the right. Enter the login information.  
Default Login: admin  
Default Password: no password - leave field blank
12. Either click connect or double click the unit in the list

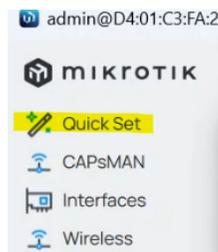


**Hint 1:** If you do not have a static IP address set, you will get the following error when trying to connect to the unit:  
ERR: Could not connect. MacConnection syn timeout.

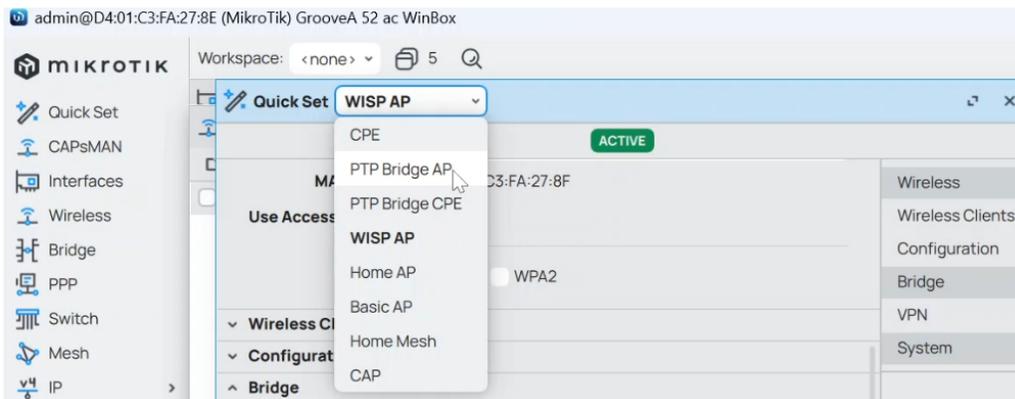
13. Once connected, if you see the RouterOS Default Configuration window (as shown below). Click 'OK' to leave the defaults. If you click 'Remove Configuration' you will be starting from scratch.



14. Click Quick Set.

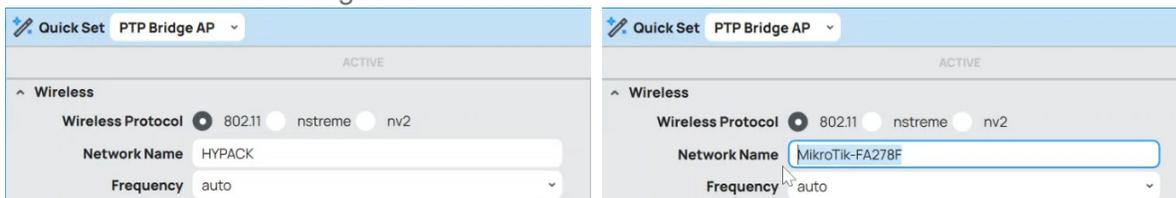


15. A new Quick Set window will open.  
16. Click the dropdown arrow and choose "PTP Bridge AP".

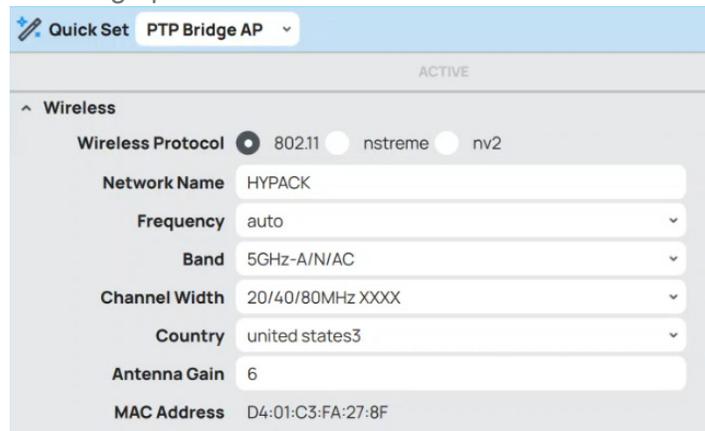


17. **Wireless:**

- a. You can leave the Network Name as is or change it. Example Below: "MikroTik-FA278F" was changed to "HYPACK".



b. Leave the remaining options as the defaults.



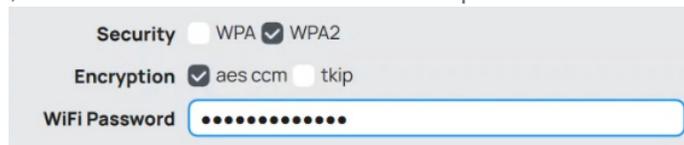
*Hint 3:* If you need to change the band to 2.4GHz, please see the Troubleshooting Section.

c. Security - This is a wireless connection; anyone will be able to access if you do not set a password.

- i. Enable WPA2
- ii. Enable Encryption aes ccm (default)
- iii. Enter a Wifi Password.

All units coming from HYPACK will be set to HypackXylem56.

This Wifi Password does not have to be set to the same admin password, however, we have chosen to use the same password for everything.



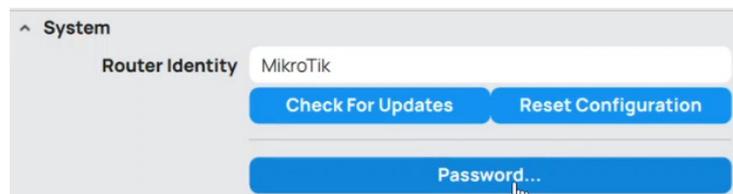
18. **Configuration:** Setting the IP address for the unit

- a. Set the radial button to 'Static'
- b. Enter the IP address

All units coming from HYPACK, the Access Point "The Master" units will be set to 192.168.1.21.



19. **System:** Set a password to protect your setup.



For all units coming from HYPACK, the password will be set to HypackXylem56.

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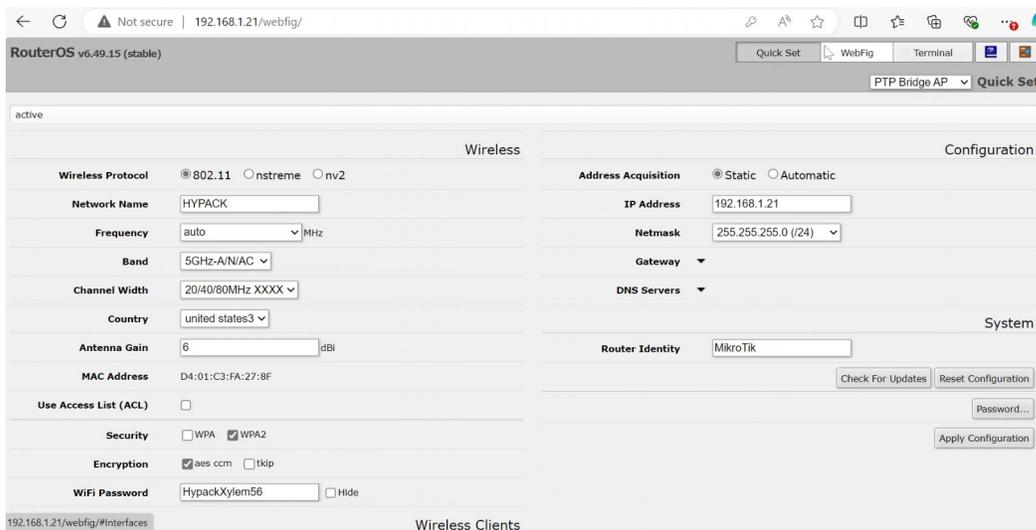
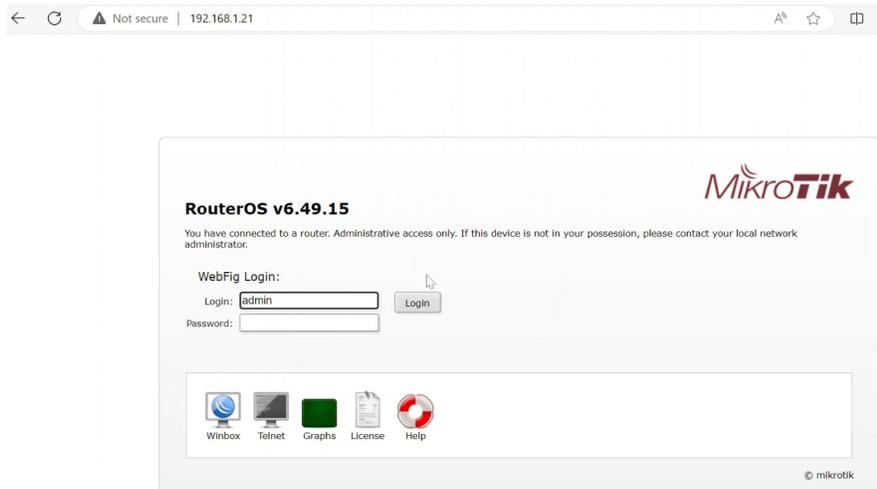
## WEB BROWSER

Once the device is setup, you do not need to use the standalone program anymore. You can connect to the device using a web browser now.

Open a web browser.

Enter the IP address you just set (192.168.1.21).

Enter Login and Password.



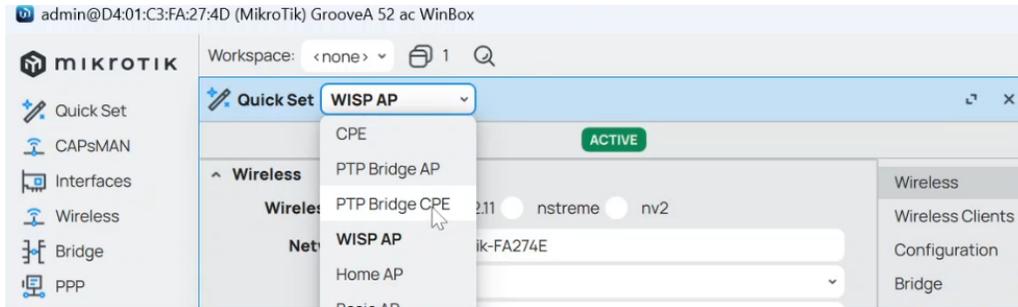
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## CONFIGURING ADDITIONAL UNIT(S) (“THE CLIENT(S)”)

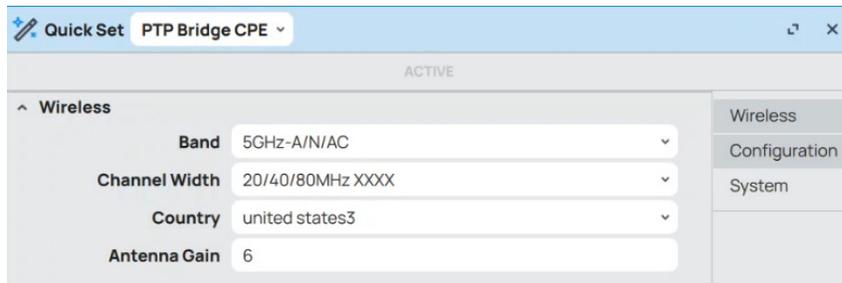
Follow the steps from the beginning of this document unit you get to the Quick Set step.

1. Connect the next GrooveA unit to the computer
2. Open Windbox.exe

3. Click Quick Set
4. Click the dropdown arrow and choose "PTP Bridge CPE"

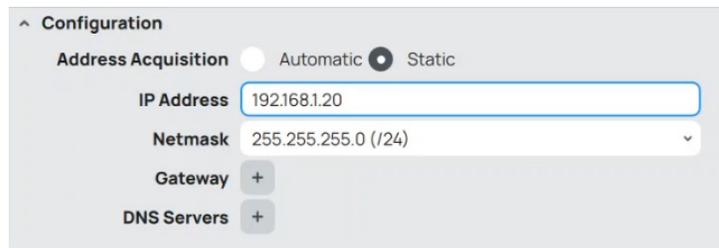


5. **Wireless:** Leave defaults



6. **Configuration:** Setting the IP address for the unit
  - a. Set the radial button to 'Static'
  - b. Enter the IP address

For all units coming from HYPACK, the "client" units will be set to 192.168.1.20 (22, 23, etc).



7. **System:** Set a password to protect your setup.  
For all units coming from HYPACK, the password will be set to HypackXylem56.

## CHECKING IF THE UNITS ARE COMMUNICATING

1. Open the web browser.

RouterOS v6.49.15 (stable) | 192.168.1.20/webfig/

active

Wireless Configuration

Band: 5GHz-A/N/AC  
Channel Width: 20/40/80MHz XXXX  
Country: united states3  
Antenna Gain: 6 dBi

Address Acquisition:  Static  Automatic  
IP Address: 192.168.1.20  
Netmask: 255.255.255.0 (/24)  
Gateway:   
DNS Servers:   
Router Identity: MikroTik Client

	Address	Network Name	Channel	Protocol	Signal Strength
PRB	D4:01:C3:FA:27:8F	HYPACK	5745/20-Ceee/ac(24d	802.11	-35
P	34:98:B5:E8:BE:4C	NETGEAR_OR	5785/20-eeCe/ac(24d	802.11	-66

System

Check For Updates | Reset Configuration | Password... | Apply Configuration

2. Select the HYPACK Network and enter the Wifi Password.

Address

	Address	Network Name	Channel	Protocol	Signal Strength
PRB	D4:01:C3:FA:27:8F	HYPACK	5745/20-Ceee/ac(24d	802.11	-38
P	34:98:B5:E8:BE:4C	NETGEAR_OR	5785/20-eeCe/ac(24d	802.11	-66
P	34:98:B5:E8:BE:92	NETGEAR_OR	5785/20-eeCe/ac(24d	802.11	-75

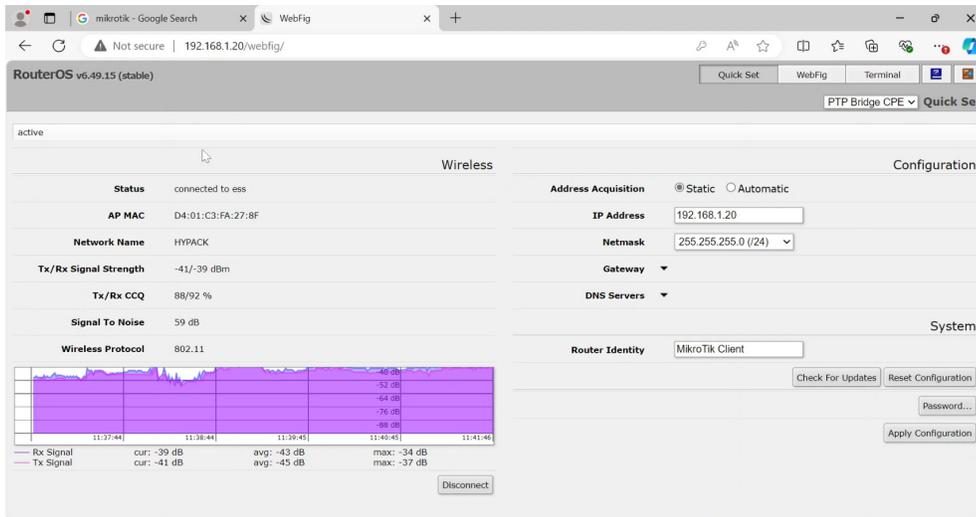
Signal Strength: cur: -38 dB, avg: -38 dB, max: -19 dB

Network Name: HYPACK

WiFi Password: HypackXylem56  Hide

Connect

## View of transmit and receive signal.



3. All the LED's on the Client unit should light up to show signal strength.



Note: The AP unit did not show signal strength lights during our office setup.



4. Go to a CMD window and ping both IP address to verify communication. You can also ping other IP addresses you might be connecting to. Example: GPS system, etc.

```
C:\WINDOWS\system32\cmd. x + v
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\Users\HYPACK>ping 192.168.1.20

Pinging 192.168.1.20 with 32 bytes of data:
Reply from 192.168.1.20: bytes=32 time=2ms TTL=64
Reply from 192.168.1.20: bytes=32 time<1ms TTL=64
Reply from 192.168.1.20: bytes=32 time<1ms TTL=64
Reply from 192.168.1.20: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.20:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\Users\HYPACK>ping 192.168.1.21

Pinging 192.168.1.21 with 32 bytes of data:
Reply from 192.168.1.21: bytes=32 time=2ms TTL=64
Reply from 192.168.1.21: bytes=32 time<1ms TTL=64
Reply from 192.168.1.21: bytes=32 time<1ms TTL=64
Reply from 192.168.1.21: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.21:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\Users\HYPACK>
```

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## TROUBLESHOOTING HINTS

### HINT 1:

If you do not have a static IP address set, you will get the following error when trying to connect:

**ERR: Could not connect. MacConnection syn timeout.**



### HINT 2:

**How to reset the unit:** Hold the reset button and plug the ethernet cable in. All LED lights will light up.

Default login:

- Username: **Admin**
- Password: **(no password)**

### HINT 3:

If you need to **change the band from 5GHz to 2.4GHz**, you must also reduce the channel width.

Example: set Channel Width first and then you can set the band. If you attempt to set Band First without reducing the Channel Width, it will automatically return to 5GHz.

<b>Band</b>	2GHz-B/G/N
<b>Channel Width</b>	20/40MHz XX