



**FOOD RETAIL**

# **RAK + LoRaWAN Gateway setup guide**

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## Safety precautions

<p><b>Installation</b></p> <p>The Gateway and Sensor must only be installed and configured by trained and authorized staff. Please follow the instructions provided in this guide otherwise the warranty may be void.</p>	<ul style="list-style-type: none"><li>• Only authorised and appropriately qualified staff should install the Gateway.</li><li>• Do not power on the device if the LoRa Antenna port has been left open as this can damage the Gateway. For more detail follow the <a href="#">instructions provided by RAK</a> (RAK Documentation Center website)</li></ul>
<p><b>Mounting</b></p> <p>As set-up and connection of the Gateway and the Sensors can vary depending on the layout of each site, it is possible that you will need to purchase an additional router to connect it successfully to all assets. Follow your company's processes regarding movement, location, connection and installation in the first instance and seek support from your AoFrio representative if needed.</p>	
<p><b>No serviceable parts</b></p> <p>There are no serviceable parts inside the Gateway and Sensor. Do not attempt to open the housing. Opening of the electronics housing, altering, or modifying the hardware will invalidate the warranty and damage the device.</p> <p>The SD card found in the SD card slot must not be ejected, as it might affect the performance of the device, as different logs and data are stored on it.</p>	<ul style="list-style-type: none"><li>• There are no serviceable parts inside the Gateway and Sensor.</li><li>• Do not open the housing.</li><li>• Do not remove or replace the SIM card</li></ul>
<p><b>Fit for purpose</b></p> <p>The Gateway and Sensor must only be used for the purposes and functions described in this manual. While AoFrio may provide technical support on suitable applications and configurations of these devices (where such a relationship may exist), no liability, responsibility or risk is accepted in determining if they are fit for purpose for any particular application.)</p> <p>No liability, responsibility or risk is accepted by AoFrio for the operational function of any particular installation or configuration.</p>	<ul style="list-style-type: none"><li>• The Gateway and Sensor must only be used for the purposes described in this manual.</li></ul>
<p><b>Cloud connection, ownership, and activation</b></p> <p>The Gateway requires a connection to upload data to the Cloud.</p> <p>Because this device is shipped in a non-active state, ownership is established as part of the setup process where AoFrio adds the device and owner to its database. Permission to manage pairing with other AoFrio hardware can be granted through User Roles within AoFrio iQ Food Retail web app.</p> <p>To use Food Retail mobile and web app, the Gateway and Sensor need to be activated to the database that you are working in and registered in the Cloud. If not activated, then it's possible you won't be able to see the device in the app's list of available devices.</p>	<ul style="list-style-type: none"><li>• Each device needs to be registered with AoFrio as part of setup and activated to the correct database</li><li>• Pairing requires additional user role permissions through AoFrio's Area Manager</li></ul>



### **Vibration and impact**

The units must be installed in such a way as to be protected from vibration and impact during operation. Exposure to impact and mechanical shock, either in operation, installation, transportation, or storage, may damage electronic circuits and housing components, leading to premature failure, and may cause the devices to become unsafe. Damage caused by impact is not covered by warranty.

- Do not drop or install the Gateway or Sensor in locations with vibration.

### **Continuous development**

AoFrio undertakes to continuously develop and improve products and services. The design and specification of these devices and contents of this manual are subject to change without notice. While every endeavour is made to ensure that all specifications and documents are current and complete,

AoFrio accepts no liability, responsibility, or risk due to omissions or changes caused by continuous improvement and design changes. Users of this manual should verify that they have the latest version of the information before proceeding.

- The design and specification of the Gateway and Food Sensor are subject to change and new firmware may be released without notice.



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## Overview

The RAK LoRaWAN Gateway is a compact device that connects LoRaWAN sensors to the internet. It receives data from nearby sensors using long-range, low-power wireless communication and forwards that data securely to the cloud for processing and monitoring.

The gateway is designed for simple installation and can typically be set up in just a few steps.



## How it works

- Sensors send data wirelessly using LoRaWAN.
- The gateway receives this data.
- The gateway sends the data to the internet using a wired or wireless network connection.
- Once connected, data is automatically forwarded to the configured cloud platform.

## Installation and setup

The RAK LoRaWAN Gateway is built for plug-and-play installation:

<b>Power</b>	<ul style="list-style-type: none"><li>• Connect the gateway to a power source using the supplied adaptor or Power over Ethernet (PoE), depending on the model.</li></ul>
<b>Internet connection</b>	<ul style="list-style-type: none"><li>• Connect the gateway to the internet using one of the supported options:<ul style="list-style-type: none"><li>• Wi-Fi – See connection steps in this manual</li><li>• Ethernet - See connection steps in this manual</li><li>• Cellular (if supported by the model) – Not described in this manual.</li></ul></li></ul> <p>No complex networking configuration is usually required.</p>
<b>Mounting</b>	<ul style="list-style-type: none"><li>• The gateway can be placed on a flat surface or wall-mounted.</li><li>• Install it in a location with good network coverage and minimal physical obstructions.</li></ul>
<b>Activation</b>	<ul style="list-style-type: none"><li>• Once powered and connected to the internet, the gateway automatically starts operating.</li><li>• In most cases, no local configuration is needed after initial setup.</li></ul>

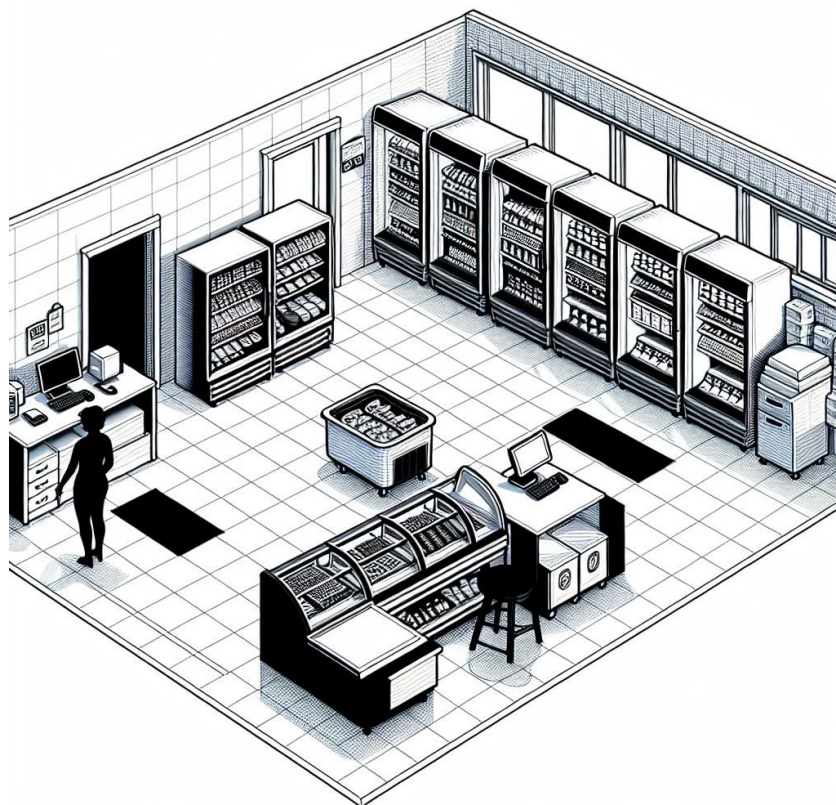




## Before you start

We recommend a few things before starting your installation:

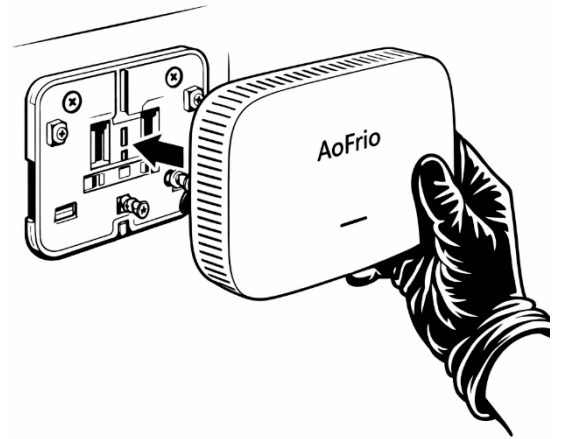
<b>Firewall settings</b> <b>(Customer IT side, if applicable)</b>	<p>If there are firewall restrictions in place, you will need to ask your IT team to allow outbound connections from this location:</p> <ul style="list-style-type: none"><li>• <a href="https://A3DE9YMJ4VOFAE.cups.lorawan.us-east-1.amazonaws.com:443">https://A3DE9YMJ4VOFAE.cups.lorawan.us-east-1.amazonaws.com:443</a></li></ul>
<b>Connection type</b>	<p>We recommend connection via Ethernet wired WAN connections are generally more stable and faster in comparison to Wi-Fi connections which can require additional maintenance if there are changes to the network configuration.</p> <p>Wi-Fi and cellular connections are also more susceptible to environmental changes, which can affect their reliability.</p>
<b>IT support on site</b>	<p>The RAK or LoRaWAN Gateway setup typically works as plug-and-play. However, because the specifics of each site's local network can vary greatly, it is recommended to have IT personnel from the customer's side present for the first store installation.</p>
<b>Ethernet password</b>	<p>If you are logging in via Ethernet, contact AoFrio beforehand for a password.</p>



## Mounting

The gateway can be mounted in multiple ways: wall-mounting, ceiling-mounting, or using a rail. The following steps relate to wall mounting:

- 1** Mark a location for the mounting bracket where you want to place the gateway on the wall and drill three 5mm holes.
- 2** Insert expansion plugs into the drilled holes then secure the mounting bracket to the wall.
- 3** Align the lower edge of the gateway's hanging hole with the bracket's locking plate.
- 4** Move the gateway closer to the bracket so that the bracket's locking plate enters the gateway's hanging hole.
- 5** Test the gateway is securely mounted then attach the antenna.
- 6** Connect the power adapter to the device and plug the other end of the adapter into a power outlet. Power on.
- 7** Check the LED lights for the gateway status then proceed to the Ethernet or Wi-Fi connection steps.





## LED lights

LED	Expected Status After Power-On	Description
PWR	ON (solid)	Power is connected; the gateway is powered on.
Breathing	Red (fast blinking)	<p>When the gateway is first powered on and not yet connected to the internet, the LED will show red with a fast blink to indicate a network issue.</p> <p>Once the gateway successfully connects to the internet, the LED will switch to green with a slow blink, indicating normal operation.</p>
ETH ( <i>if Ethernet is connected</i> )	ON / Flickering	Ethernet port is active; data transmission may be occurring.
WLAN	ON / Flickering	Wi-Fi AP mode is active and functional.
LoRa	ON / Flickering	Indicates the LoRa transceiver is operational and handling packets.
LTE ( <i>RAK7268CV2 only</i> )	Fast flickering or slow idle blinking	LTE module is either transmitting data or searching for a network.

## About connecting via Wi-Fi

If you do connect Gateway via Wi-Fi AP mode, the default for the Gateway configuration is Access Point (AP) mode as described in the following pages.

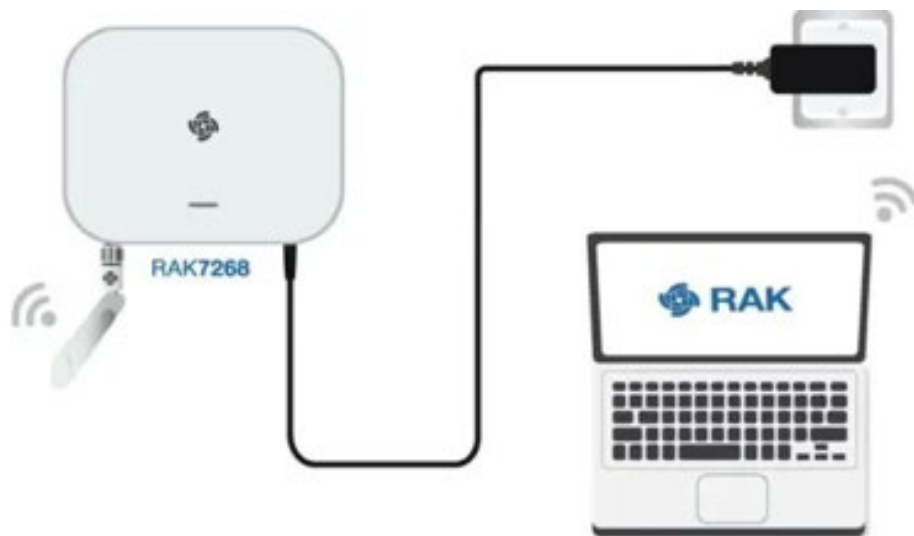


Figure 3: Accessing the gateway via Wi-Fi AP mode



## How to connect via Wi-Fi in AP mode

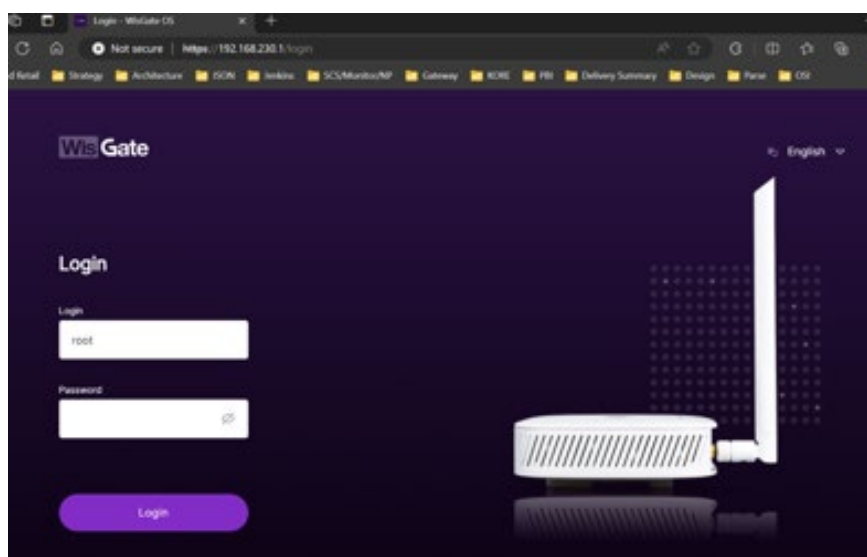
### 1 Connect the Wi-Fi

- SSID: RAK72XX\_XXXX (no password is required to connect via Wi-Fi)



### 2 Login the Web UI

- Either connect via a browser to the IP address assigned to the Gateway, which is 192.168.230.1 by default. You should see the login window. Use the credentials below:
  - UI user: root
  - UI password: root



- Or connect to the internet via Wi-Fi

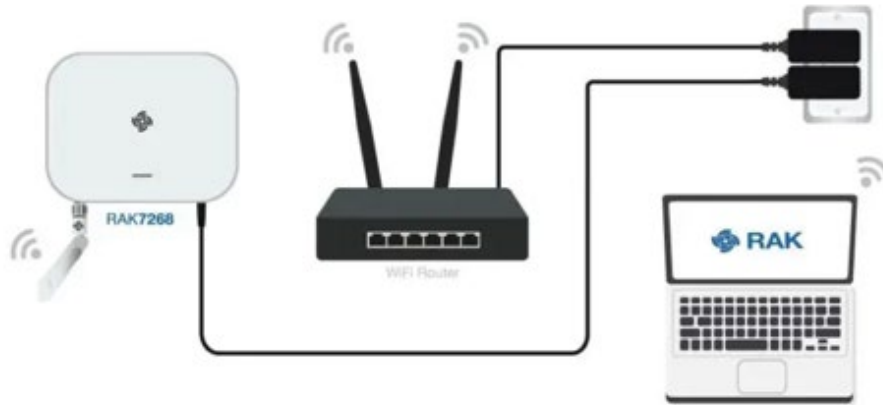
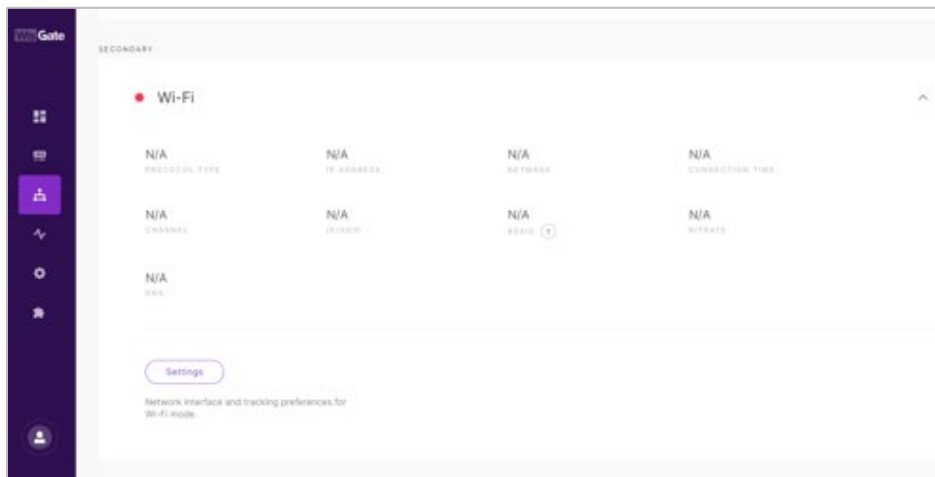


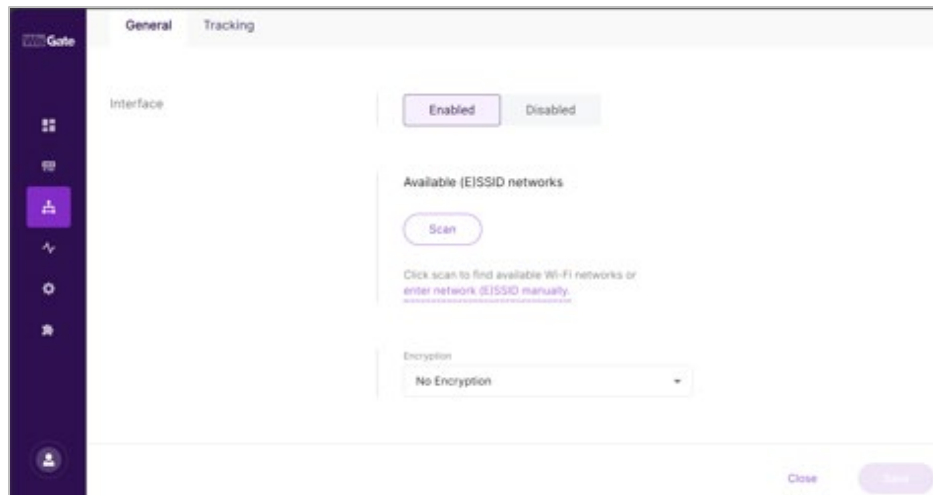
Figure 10: Accessing the gateway via Wi-Fi AP mode

- 3 To access the gateway's Web UI, open the **Network** menu, then click on **WAN**.
- 4 Click on the **Wi-Fi** dropdown and click on **Settings**.



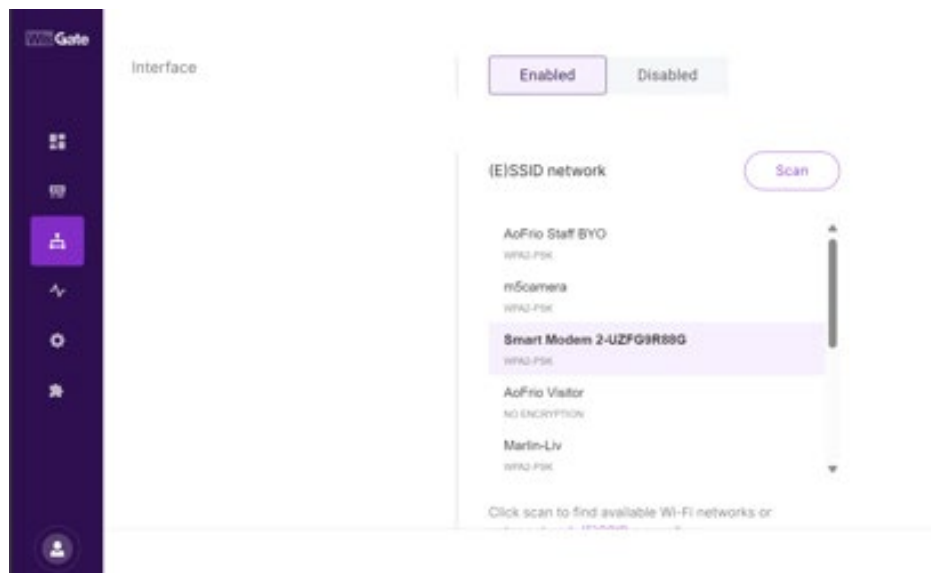
5

Enable the **Interface**. NOTE: This is normally disabled by default.

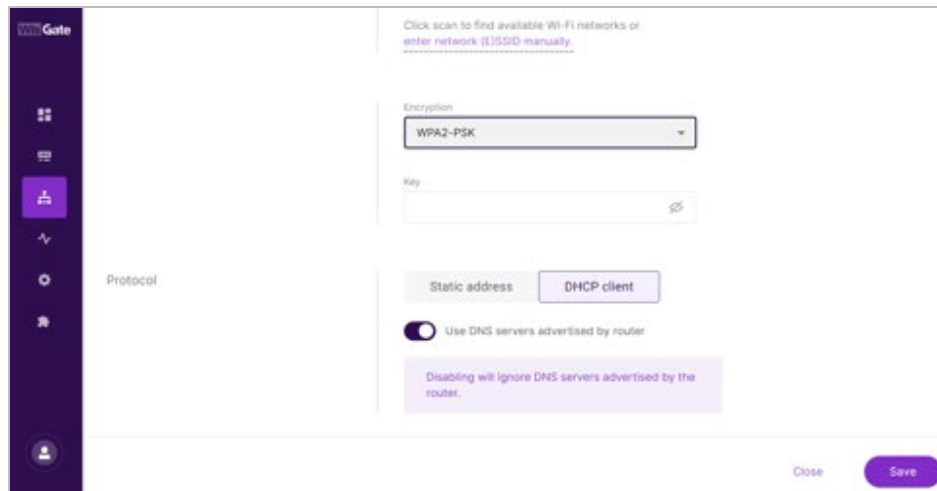


6

Click the **Scan** button to choose your ESSID network, or type in the ESSID network number by clicking enter network (E)SSID manually.



**7** Select the **Encryption** type and enter the key, then click on **Save**. The Gateway will then be able to access the internet via Wi-Fi.



The screenshot shows a web-based configuration interface for a Gateway. On the left is a dark purple sidebar with icons for Home, Settings, Users, and other functions. The main content area is white and contains the following elements:

- A link: "Click scan to find available Wi-Fi networks or enter network (SSID) manually."
- An "Encryption" dropdown menu set to "WPA2-PSK".
- A "Key" input field with a copy icon.
- Two radio buttons for "Protocol": "Static address" (unselected) and "DHCP client" (selected).
- A toggle switch for "Use DNS servers advertised by router" which is turned on.
- A purple informational box: "Disabling will ignore DNS servers advertised by the router."
- At the bottom right, there are "Close" and "Save" buttons.

**NOTE:** Assuming you have entered the correct parameter values you should get an IP address assigned by your Wi-Fi router's (AP) built-in DHCP server. You can use this new IP address to log in via a web browser (the same way as in AP mode).

## About connecting via Ethernet (WAN port)

Connect the Ethernet cable to the port marked ETH on the gateway and the other end to the router. The router's DHCP server should assign an IP Address to the gateway.

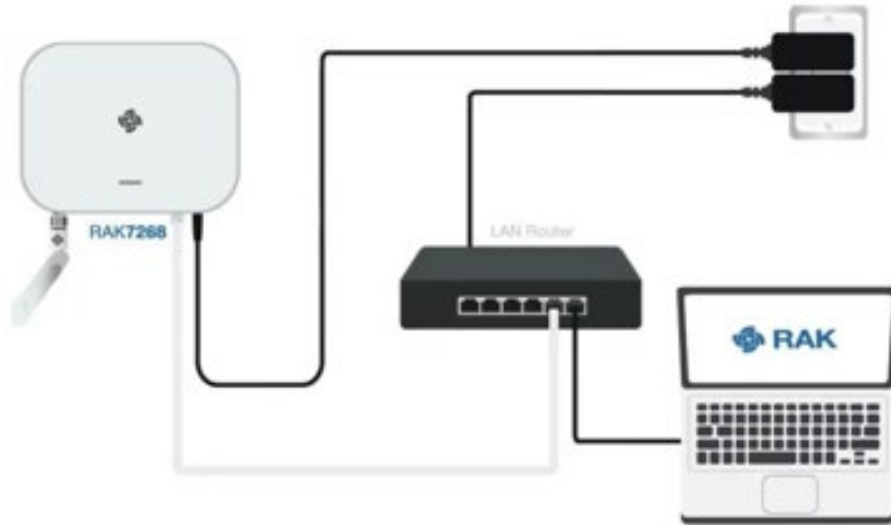


Figure 12: Connect through Ethernet settings



## How to connect via Ethernet with a Static IP Setting (WAN port, if applicable)

1

Prior to configuring the gateway's static IP, identify a free IP address.

<b>Identify the Conflicting Devices</b>	Determine which devices on your network are experiencing the IP address conflict. Symptoms include one or more devices not being able to connect to the network or the internet, or intermittent connectivity.
<b>Access Your Router's Configuration</b>	Open a web browser and type your router's IP address in the address bar. This is often 192.168.1.1 or 192.168.0.1, but it could be different. Check your router's documentation if you're unsure.
<b>Log in to Your Router</b>	Contact AoFrio for the password to log in.
<b>Find the DHCP Client List (or Connected Devices)</b>	Look for a section in your router's settings that lists connected devices. This might be called "DHCP Clients," "Attached Devices," or something similar. This will show you the IP address, MAC address, and hostname of each device currently connected.
<b>Identify a Free IP Address</b>	Choose an IP address within your router's subnet (the same range as your other devices), but <i>outside</i> the range used by the DHCP server. For example, if your DHCP range is 192.168.1.100 to 192.168.1.199, you could use 192.168.1.200 or higher. It's crucial that this IP address is not already assigned to any other device.

2

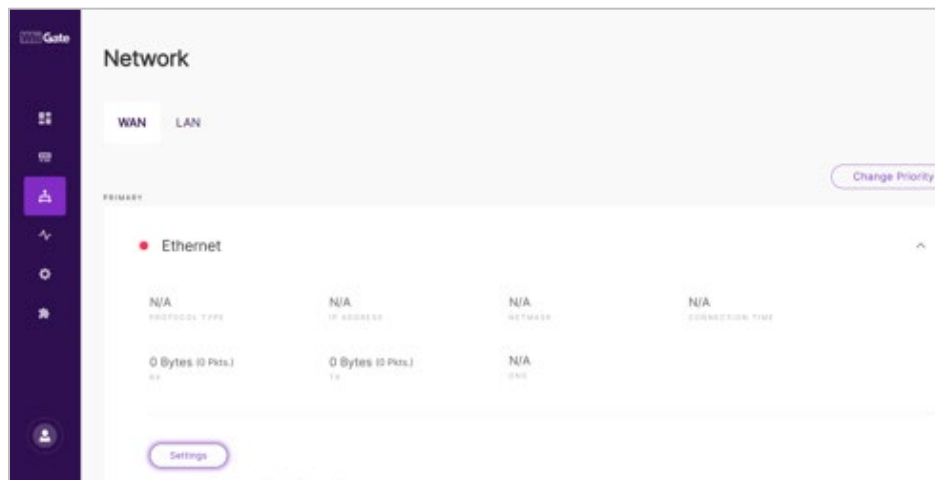
**Configure the Gateway with the Static IP:** On the device that's experiencing the conflict, go to its network settings. You'll need to set the following:

- **IP Address:** The free IP address you identified in the previous step (e.g., 192.168.1.200).
- **Subnet Mask:** This should be the same as your router's subnet mask (e.g., 255.255.255.0).
- **Default Gateway:** This is your router's IP address (e.g., 192.168.1.1).
- **DNS Server:** You can use your router's IP address or public DNS servers like Google Public DNS (8.8.8.8 and 8.8.4.4) or Cloudflare DNS (1.1.1.1 and 1.0.0.1).

- 3 From the Launch page click on the **Network** icon in the main menu to open the **Network** page.



- 4 Expand the **Ethernet** section and click **Settings**.





- 4 Select the **Static address** tab and enter the details of the IPv4 address, netmask, router(gateway) address, and DNS Server Address, then click **Save**.

Note: You may need to restart the device for the changes to take effect.

The screenshot shows the Mikrotik WinBox interface for configuring a network interface. The 'General' tab is selected, and the 'Tracking' sub-tab is active. The 'Interface' field is set to 'ether1'. A toggle switch for 'Enable WAN and disable LAN' is turned on. Under the 'Protocol' section, the 'Static address' tab is selected. The configuration fields are as follows:

- IPv4 address: 192.168.255.4
- IPv4 netmask: 255.255.0.0
- IPv4 router: (empty)
- DNS Server: (empty) with an 'Add' button next to it.

At the bottom right of the configuration panel, there are 'Close' and 'Save' buttons.

## How to directly connect the Gateway via Ethernet (WAN port)

Use the line to directly connect laptop and gateway, the default IP of the gateway is 169.254.X.X, derived from the last 4 bits of the MAC address. For example, if the last 4 bits are 0F:01, the gateway IP is 169.254.15.1, and the laptop will be assigned a static IP in the same subnet on the ethernet device e.g. 169.254.15.100.

Connect the web portal via <https://169.254.15.1>, then follow the same configuration steps described before.

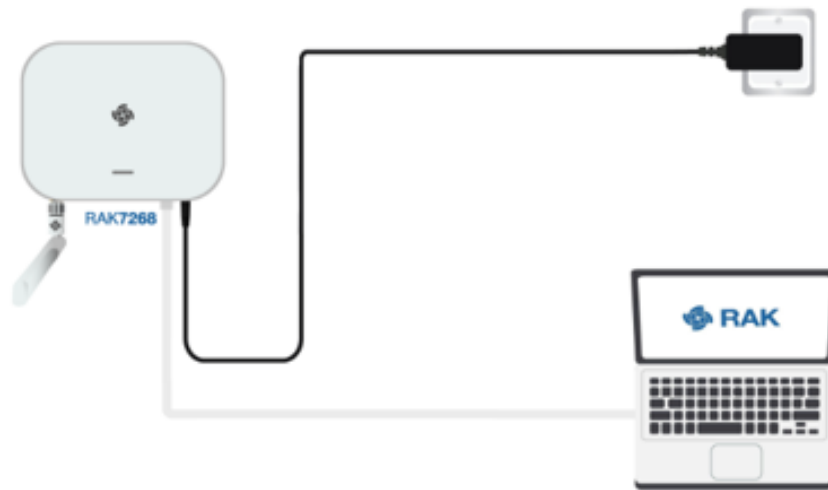


Figure 11: Access the gateway via WAN Port (Ethernet)