Fraimic WiFi & Home Network Guide

How Fraimic connects, recovers, and adapts to your home network

Fraimic Engineering

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At a Glance

Fraimic turns your voice into art. You tap the frame, speak a prompt, and moments later a unique piece of artwork appears on the display. Behind the scenes, your voice recording travels over WiFi to our servers, where it's transcribed and transformed into an image that's sent back to the frame. A reliable internet connection is what makes this voice-to-vision experience possible.

The good news is that Fraimic is designed to handle WiFi on its own. You set it up once — choose your home WiFi network, enter the password — and the frame takes care of the rest from that point forward.

Works with any home WiFi setup. Whether you have a single router, a router with extenders or repeaters, or a whole-home mesh system, Fraimic adapts. It automatically finds the strongest signal, connects in seconds, and confirms it can reach the internet before doing anything else. The network name and password you provide during setup are all Fraimic needs — it uses those same credentials every time it reconnects, no matter which access point in your home it connects through.

Handles problems on its own. If your internet goes down or your router reboots, Fraimic notices. It keeps trying to reconnect in the background and recovers automatically when service is restored. If it connects to an extender that doesn't have proper internet access, it detects the issue and switches to a different access point — without you having to do anything.

Stays accessible during outages. When Fraimic can't reach the internet, it creates its own temporary WiFi network (called "Fraimic_XXXXX") so you can still connect to the frame from your phone to check its status or update settings. This runs alongside its connection to your router, so recovery continues in the background while you browse the portal.

Smart about battery life. When the frame is plugged into a charging cable, it retries more aggressively since battery drain isn't a concern. On battery power, it uses longer intervals between retries to conserve charge.

The rest of this guide covers how to set up WiFi, how the connection system works under the hood, and how to troubleshoot if something goes wrong.

First-Time Setup

Step 1: Power On and Wait

When you turn on Fraimic for the first time:

1. The frame starts up and looks for a saved WiFi network
2. Since it's new, it won't find one — so it creates its own temporary WiFi network
3. **The LED blinks purple** — this means Fraimic is in setup mode and ready for you to connect

The network name is unique to your device — it looks like **"Fraimic_12345"** (the numbers are different for each frame). Give it about 30 seconds to initialize.

Step 2: Connect to Your Fraimic's Network

On your phone or tablet:

1. Open your WiFi settings
2. Look for a network starting with **"Fraimic_"** followed by a number (e.g., "Fraimic_48291")
3. Tap it and connect — no password is needed, it's an open network
4. A setup page should appear automatically (captive portal). If it doesn't, open a browser and go to `http://192.168.4.1`

Step 3: Choose Your Home Network

You'll see a list of WiFi networks available in your area. Find the one you normally use on your phone or computer and tap it.

Important: Fraimic only works on **2.4 GHz WiFi**. If you see two versions of your network (like "HomeNet" and "HomeNet-5G"), pick the one **without** the "5G" suffix. If your router uses a single name for both bands, don't worry — Fraimic will automatically connect to the 2.4 GHz signal.

Step 4: Enter Your WiFi Password

Type in your WiFi password exactly as it is — passwords are case-sensitive, so double-check capital letters and numbers.

Step 5: Save and Restart

Tap "Connect" and wait. Fraimic will:

1. Save your WiFi network name and password
2. Show a **“Ready To Restart”** confirmation page with a restart button
3. Tap the **Restart** button (or power cycle the frame) to apply the new settings

After restarting, Fraimic connects to your home WiFi automatically. **The LED blinks blue** briefly while connecting, then turns off once connected. The “Fraimic_XXXXX” setup network disappears — you’re done.

Note: The frame does not connect to your home network immediately after entering credentials. It saves them first and requires a restart to switch over. This is by design.

How Fraimic Connects to WiFi

Every time Fraimic powers on, it follows a multi-tier connection strategy designed to connect as quickly as possible while handling edge cases like offline routers and misconfigured extenders.

Tier 1: Quick Connect (2–3 seconds)

Fraimic's first attempt is optimized for speed:

- It loads your saved WiFi credentials and the **channel hint** from the last successful connection
- It performs a fast scan focused on that channel, looking for any access point broadcasting your network name
- It picks the access point with the **strongest signal** — if you have a router and an extender, it chooses whichever is closer
- The LED blinks blue briefly during this process
- If successful, Fraimic is online in 2–3 seconds

Key detail: Fraimic does not lock onto a specific access point across sessions. Every boot, it re-evaluates signal strength and picks the best option available. This means if you move the frame to a different room (closer to your extender than your router), it will naturally connect to the extender on the next boot.

Tier 2: Deep Scan Fallback (5–15 seconds)

If Tier 1 fails within 12 seconds (access point not found, wrong channel, authentication rejected), Fraimic switches to a more thorough approach:

- It scans **priority channels first** (1, 6, and 11 — the most common) then all 13 channels
- It builds a list of every access point broadcasting your network name
- Each access point is **scored by signal strength** with a bonus for the last-known-good channel
- Fraimic tries to connect to each one in score order, up to 5 access points
- If your network has multiple access points, this ensures all of them are tried

This tier is slower but much more thorough. It handles scenarios like routers that changed channels, extenders on different channels, or temporary interference on the usual channel.

Background Retry: When Your Router Is Offline

If both Tier 1 and Tier 2 fail — meaning Fraimic can't find your network at all (common when the router is powered off or rebooting) — it doesn't give up:

- **The "Fraimic_XXXXX" network appears** so you can access the portal, check status, or reconfigure WiFi
- In the background, Fraimic retries the connection **every 60 seconds**
- When your router comes back online, Fraimic detects it on the next retry and connects automatically
- Once connected, Fraimic runs its full startup sequence (time sync, server check, connectivity monitoring) and resumes normal operation
- The "Fraimic_XXXXX" network remains available during this recovery — it does not interfere with the connection to your router (both run simultaneously via APSTA mode)

Power-aware retry behavior:

Power State	Retry (sec)	Notes
Battery only	60	Conserves battery during extended outages
Charging cable	60	Same interval; more aggressive recovery once connected (see Internet Monitoring & Recovery)
Always-awake mode	60	Same as charging — battery drain is not a concern

Reconnect-on-Disconnect: Mid-Session Resilience

If WiFi drops while Fraimic is already running (router reboots, temporary interference, range issue), the frame doesn't wait for the next boot cycle:

- It immediately attempts to reconnect, up to **3 retries**
- The first retry targets the **last confirmed-good access point** (the one that previously had working internet) by its BSSID — this prevents the frame from falling back to a closer extender that has no internet
- If the confirmed-good access point doesn't respond, subsequent retries clear the BSSID lock and try any available access point
- If all 3 retries fail, the **background retry** process activates (same as the boot-failure scenario above), and the "Fraimic_XXXXX" network appears

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Internet Monitoring & Recovery

Connecting to WiFi is only half the story. Fraimic also needs to verify that the WiFi connection actually reaches the internet — because it's common (especially with extenders and travel routers) to be "connected to WiFi" but have no internet access.

How Fraimic Checks Internet Connectivity

A background process called the **Connectivity Monitor** runs continuously while Fraimic is awake:

- It performs a **TCP connection test** to Google's public DNS server (8.8.8.8 on port 53) at regular intervals
- This test bypasses DNS entirely — it checks raw network reachability with a 3-second timeout
- If the test succeeds, Fraimic knows the internet is working
- If it fails, Fraimic begins escalating through recovery states

The Recovery State Machine

The Connectivity Monitor uses adaptive check intervals that become more aggressive as problems are detected:

State	Battery (sec)	Powered (sec)	What's Happening
Healthy	60	60	Internet working. Routine checks.
Degraded	15	15	TCP failure detected. Checking more frequently to confirm.
Recovering	Immediate	Immediate	AP failover just completed. Verifying new access point.
Exhausted	60	30	Failover attempted, no working AP found. Waiting before retrying.

State	Battery (sec)	Powered (sec)	What's Happening
Passive	300	60	Prolonged outage. Reducing WiFi churn to save battery.

Powered vs. battery: When a charging cable is connected or always-awake mode is enabled, the Exhausted and Passive states use significantly shorter intervals. This means recovery from a prolonged outage takes roughly 3–4 minutes when powered, compared to up to 15 minutes on battery. The Healthy and Degraded intervals remain the same regardless of power state — fast detection is always important.

What Happens When Internet Is Lost

Here's the sequence of events when the internet goes down while Fraimic is connected to WiFi:

1. **First TCP failure** — Fraimic transitions to the Degraded state, increases check frequency to every 15 seconds, and **enables the "Fraimic_XXXXX" network** so you can access the portal
2. **Three consecutive failures (~45 seconds)** — Fraimic triggers **AP failover**: it blacklists the current access point's BSSID and runs a full scan to find an alternative with internet
3. **Post-failover verification** — If a new access point is found, Fraimic connects and immediately tests internet (within 100ms, not 60 seconds). A single failure at this stage marks the new AP as bad (it was just found by scan — if it doesn't work immediately, it's not going to)
4. **Failover exhaustion** — If no working access point can be found after cycling through alternatives, Fraimic enters the Exhausted state. After 2 checks (60–120 seconds depending on power state), it clears its blacklist and tries the full failover cycle again
5. **Prolonged outage** — If repeated failover cycles fail, Fraimic enters the Passive state. It continues TCP checks at longer intervals (5 minutes on battery, 60 seconds when powered) but stops triggering WiFi failovers to prevent unnecessary churn
6. **Recovery** — When any TCP check finally succeeds, all states reset to Healthy, the AP blacklist is cleared, the confirmed-good channel is saved, and the "Fraimic_XXXXX" network is disabled

Important battery note: The Connectivity Monitor never resets the deep sleep timer. If Fraimic was going to sleep after a period of inactivity, an internet outage won't keep it awake indefinitely — it will still sleep on schedule to protect battery life.

LED Feedback During Outages

LED Behavior	Meaning
Orange blinking (slow, ~2 sec cycle)	No internet for ~3 min. Fraimic is actively recovering.
Single red blink on tap	Recording blocked — no internet to upload artwork. Wait or check router.
Orange stops, LED off	Internet restored. Normal operation resumed.

What you should do when you see orange blinking: In most cases, nothing. Fraimic is actively testing alternative access points and retrying your router. If the issue is a temporary ISP outage, it will resolve on its own. If it persists for more than 10–15 minutes, check that your router is powered on and your internet service is working (test on your phone). You can also connect to the "Fraimic_XXXXX" network and visit `192.168.4.1` or `fraimic.local/info` to check the frame's status.

When the "Fraimic_XXXXX" Network Appears

The frame enables its own WiFi hotspot in several situations — always to give you portal access while it works on the problem:

Trigger	Appears	Fraimic Action	You Should
First-time setup	Immediately on first boot	Waiting for WiFi config	Connect and set up credentials
Boot failure	After Tier 1 + 2 fail	Retrying every 60 sec	Wait (auto-recovers) or reconfigure
Internet loss	Within ~60 sec of outage	Testing alternative APs	Wait, or connect to check status
WiFi loss	After 3 reconnect failures	Background retry every 60 sec	Wait. Check router if persistent.

In all cases except first-time setup, Fraimic runs both its own hotspot and its connection to your router simultaneously (APSTA mode). This means recovery continues in the

background — you connecting to the “Fraimic_XXXXX” network to check status does not interrupt the recovery process.

Network Device Types & Compatibility

Compatibility Overview

Not all network setups are equal when it comes to IoT devices like Fraimic. The table below summarizes how common configurations work:

Setup	Rating	Notes
Single router	Ideal	Simplest — one AP, one channel, direct internet
Router + wired AP	Ideal	Both APs have direct internet via ethernet
Mesh (Eero, Google, etc.)	Ideal	Seamless roaming, one SSID, all nodes have internet
Router + extender (same channel)	Good	Fraimic picks the stronger signal automatically
Router + bridge-mode device	Good	Bridge is transparent — same subnet, no issues
Router + extender (different channel)	Usually fine	Different channels are normal. Fraimic connects to both via Tier 2. Only problematic if the extender lacks internet. See “Understanding WiFi Channels” below
Router + extender (no internet)	Problematic	Connects to extender but can’t reach internet. Failover adds 30–60 sec
Router + travel router (router mode)	Problematic	Separate subnet — no internet. Auto-recovered but adds delay

Setup	Rating	Notes
Guest network (client isolation)	Problematic	May block IoT internet access. Use main network instead
5 GHz-only network	Incompatible	Fraimic uses 2.4 GHz only — 5 GHz is invisible
Enterprise WiFi (802.1X)	Incompatible	Only WPA/WPA2 personal (password) supported

Understanding WiFi Channels

WiFi channels are like lanes on a highway — your router picks one, and devices tune in to communicate. On the 2.4 GHz band (the one Fraimic uses), there are 13 channels, but they overlap with each other. Only **channels 1, 6, and 11** are fully non-overlapping, meaning they don't interfere with their neighbors. Most routers default to one of these three.

Why non-overlapping channels matter. When two access points use the same channel, they take turns transmitting (like a polite conversation). When they use *overlapping* channels (e.g., channels 3 and 5), their signals bleed into each other and cause interference — like two conversations happening at the same volume in the same room. Non-overlapping channels avoid this entirely because the signals don't cross.

This is why channels 1, 6, and 11 are the standard recommendation: devices on channel 1 can't hear devices on channel 6, so they operate independently without interference.

What "different channel" means for extenders. When you see a "Different channel" warning on the WiFi Stats page, it means your router and extender are broadcasting on different channels. This is **not necessarily a problem** — in fact, it's sometimes intentional:

- **Extenders often use a different channel on purpose.** Some extenders deliberately choose a different non-overlapping channel to avoid interfering with the router's signal. This can actually improve overall network performance.
- **The key question is internet access, not channel matching.** An extender on a different channel works just fine as long as it reliably passes internet traffic. Fraimic's internet verification (the TCP check to 8.8.8.8:53) confirms this automatically.
- **When it does cause issues:** If an extender ends up on an *overlapping* channel (e.g., router on channel 1, extender on channel 3), interference can degrade both connections. Or if the extender chose a different channel because it's too far from the router,

its backhaul connection may be weak — meaning it has WiFi but unreliable internet.

How Fraimic handles different channels. When Fraimic sees access points on different channels, it doesn't skip them — it tries them. During Tier 2 scanning, all matching APs are scored by signal strength regardless of channel. The "Different channel" warning on the WiFi Stats page is informational, not an error. It helps you understand your network topology.

Where channels matter most is **Tier 1 fast connect**: Fraimic remembers the channel from its last successful connection and scans there first. If your router is on channel 1 and the extender is on channel 6, Tier 1 will find whichever AP matches the saved channel hint. The other AP is still reachable via Tier 2's full scan.

Bottom line: Different channels between your router and extender are normal and often fine. The things that actually cause problems are weak signal, no internet on the extender, or overlapping (but not identical) channels causing interference.

Device Type Details

Router. Your primary WiFi device. It connects to your ISP and broadcasts WiFi throughout your home. Every home network has one, and it's the single source of internet for all other devices.

For Fraimic: Standard routers work perfectly. Fraimic connects directly and stays connected. This is the simplest, most reliable setup.

Extender / Repeater. A device that picks up your router's WiFi signal and rebroadcasts it to cover dead zones. It shares the same SSID as your router, so devices (including Fraimic) see both as one network.

How it works: The extender receives each WiFi packet from the router and retransmits it. Because it uses one radio for both receiving and transmitting, this roughly halves the available throughput. For Fraimic, this doesn't matter — the frame only sends brief bursts of data (voice recordings up, artwork down).

The channel question: Your extender may end up on a different channel than your router — this is normal and often intentional (see "Understanding WiFi Channels" above). What matters is whether the extender reliably passes internet traffic. Fraimic verifies this automatically and fails over if needed. You can check channel details on the `fraimic.local/wifi-stats` page.

For Fraimic: Generally good. Fraimic connects to extenders regardless of channel. The only concern is whether the extender has reliable internet — if it doesn't, Fraimic detects this and switches to an AP that does.

Access Point (Wired). Similar to an extender but connected to your router by an ethernet cable instead of WiFi. This gives it a direct, full-speed internet connection independent of the router's wireless signal.

For Fraimic: Ideal. Both the router and access point have reliable internet, so Fraimic can safely connect to whichever has the stronger signal. No throughput penalty, no channel mismatch risk (wired APs choose channels independently).

Bridge. A device that connects to your router's WiFi and shares that connection with other devices. The defining feature: devices behind a bridge receive their IP addresses from your main router, not from the bridge itself. This makes the bridge transparent — it's invisible to the network.

Some travel routers and extenders offer a "bridge mode" setting. When enabled, they behave this way instead of creating their own subnet.

For Fraimic: Ideal. Everything stays on the same network and IP range. Fraimic connects and works exactly as it would directly with your router.

Travel Router / Secondary Router. A small standalone router, often portable, used for travel or to extend a network. In its default **"router mode,"** it creates its own separate network with its own IP address range (subnet). This means devices connected to it are on a different network than devices connected to your main router.

The problem for IoT devices: Fraimic may connect to the travel router (if it has a stronger signal) and receive an IP address. It will appear "connected to WiFi," but it won't be able to reach the internet because it's on the wrong subnet. Fraimic detects this within about 30 seconds and automatically switches to your main router, but it adds delay.

For Fraimic: Problematic in router mode. If you have a travel router, set it to **"bridge"** or **"access point"** mode. This makes it transparent to the network and eliminates the subnet problem entirely.

Mesh Network. A WiFi system where multiple devices (called "nodes") work together to blanket your home in signal. All nodes share one SSID and coordinate handoffs between them. Popular systems include Eero, Google Nest WiFi, TP-Link Deco, and Netgear Orbi.

For Fraimic: Mesh is ideal. Fraimic automatically connects to the nearest node with the strongest signal. When you move the frame to a different room, it seamlessly switches nodes on the next boot. The frame doesn't care which brand of mesh you use — it just sees one network name and picks the strongest signal.

Common Home Setups

Setup A: Single Router

The setup: One WiFi router in your home.

How Fraimic works: - Connects to your router via Tier 1 in 2–3 seconds - Stays connected as long as it's in WiFi range - Low battery drain — no scanning, no failover needed - If the router reboots, Fraimic reconnects automatically (mid-session reconnect or background retry depending on timing)

Best for: Fraimic placed in the same room or adjacent to your router, or in a small home where router coverage is strong everywhere.

Setup B: Router + One Extender

The setup: Your router in one location, plus one extender in another area for better coverage.

How Fraimic works: - Both devices broadcast the same network name, so Fraimic sees them as one network - On each boot, Fraimic picks whichever has the stronger signal - Whether the extender is on the same or a different channel, Fraimic can connect to either one - Tier 1 fast connect uses the last-known channel, so it finds whichever AP was used last; Tier 2 scans all channels and finds both - Fraimic verifies internet through whichever AP it connects to — if the extender doesn't pass internet properly, the frame detects this and fails over to the router

Best for: Fraimic used in different rooms. Place the extender between the router and the frame's location.

Tip: If Fraimic keeps connecting to the extender but has no internet, the issue is the extender's internet backhaul, not the channel. Check that the extender is in range of your router and properly configured in repeater/bridge mode.

Setup C: Mesh Network

The setup: Multiple mesh nodes (2–3 typically) spread throughout your home, all with the same network name.

How Fraimic works: - Automatically picks the nearest node with the strongest signal - All nodes have internet, so AP failover is rarely triggered - Very reliable connection with minimal battery drain - Moving the frame to a different room? It picks the nearest node on

the next boot

Best for: Any multi-room setup. Mesh networks are the ideal configuration for IoT devices like Fraimic.

Setup D: Router + Wired Access Point

The setup: Your main router, plus an access point connected by ethernet cable.

How Fraimic works: - Connects to whichever has the stronger signal - Both have direct internet connections, so either one works reliably - No extra battery drain from failover scanning - No throughput penalty on either AP

Best for: Larger homes or situations where you want guaranteed strong WiFi in specific areas.

Setup E: Router + Travel Router

The setup: Your main router, plus a travel router (in router mode or bridge mode).

How Fraimic works: - If the travel router is in **bridge/AP mode** — Fraimic treats it like any other access point. Works seamlessly. - If the travel router is in **router mode** — Fraimic may connect to it but will detect the lack of internet within ~30 seconds, blacklist it, and switch to your main router. It works, but adds delay. The LED may briefly blink orange during this process.

Best for: If you must use a travel router, set it to bridge or AP mode for the best experience.

Setup F: Guest Network

The setup: Your router broadcasts two networks — a primary “Home” network and a “Guest” network.

For Fraimic: Connect Fraimic to your **main Home network** during setup. Guest networks sometimes enable client isolation (preventing devices from communicating with each other) or restrict internet access for IoT devices. If Fraimic is on the Guest network and your phone is on the Home network, local features like `fraimic.local` may not work.

The Info Page — Network Section

The Info page (`fraimic.local/info`) is the first place to check when you want to understand your frame's current status. You can access it by:

- Typing `fraimic.local/info` directly in your browser (while on the same network as the frame)
- Tapping the **"Device Information"** link at the bottom of the `fraimic.local` portal landing page
- If the frame is in setup mode or has enabled its "Fraimic_XXXXX" network, connect to that network and visit `192.168.4.1`

The page has several sections (Power, Network, Display, Device), but the **Network** section is the most relevant for WiFi diagnostics.

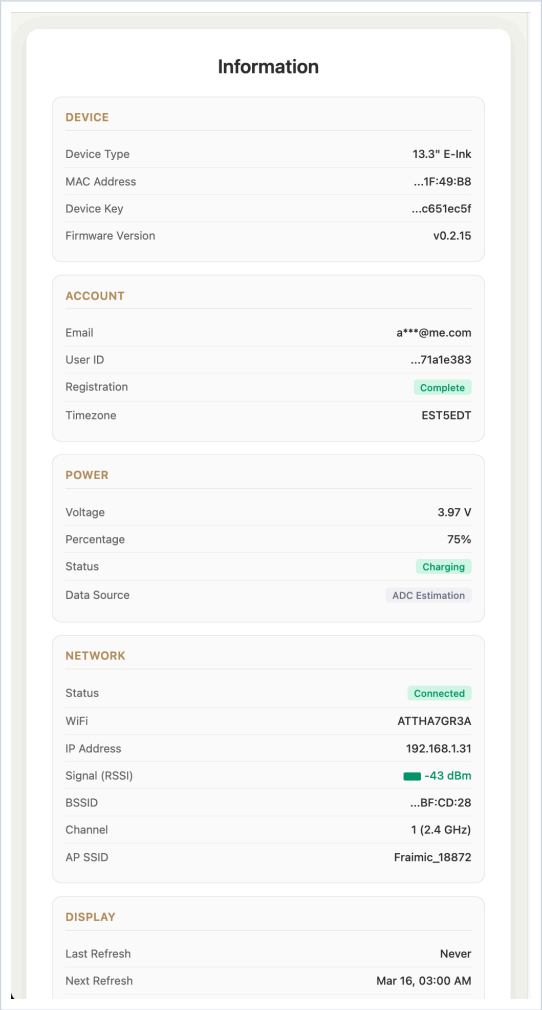


Figure 1: Info Page — Network Section

Network Section Fields

Field	Shows	Look For
Status	“Connected” (green) or “Disconnected” (red)	Disconnected = WiFi lost. Check router.
WiFi	Network name (SSID)	Confirm it’s your intended network
IP Address	Local IP (e.g., 192.168.1.42)	Use for direct access if `fraimic.local` fails

Field	Shows	Look For
Signal (RSSI)	Color-coded bar + dBm value	Most important quality indicator. See table below.
BSSID	AP hardware address (last 3 octets, e.g., "…D4:E5:F6")	Which AP is in use — router vs. extender
Channel	WiFi channel + band (e.g., "6 (2.4 GHz)")	Should show 2.4 GHz. Different from extender = mismatch.
AP SSID	Frame's hotspot name (e.g., "Fraimic_48291")	The setup network name for your phone's WiFi list

Understanding Signal Strength on the Info Page

The Signal (RSSI) field uses a color-coded bar and dBm number to show connection quality at a glance:

Color	RSSI (dBm)	Label	Meaning
Green	-30 to -50	Excellent	Best connection. Fast uploads, instant reconnects.
Yellow-green	-50 to -60	Good	Normal range. All features work reliably.
Orange	-60 to -70	Fair	Usable but slower reconnects. Move closer or add extender.
Red	Below -70	Weak	Unreliable. Frequent drops, slow uploads. Improve coverage.

Quick rule of thumb: If the bar is green or yellow-green, you're in good shape. If it's

orange, keep an eye on the Connection History for reconnection events. If it's red, move the frame or improve coverage in that area.

When to Use /info vs. /wifi-stats

The `/info` page gives you a quick snapshot — is the frame connected, how strong is the signal, which AP is it using? If everything looks normal, you're done.

The `/wifi-stats` page (next section) is for deeper investigation — scanning for all available APs, reviewing connection history, testing internet reachability, and examining lifetime counters. Go there when something seems wrong or when reporting an issue to support.

The WiFi Stats Page

The WiFi Stats page (`fraimic.local/wifi-stats`) is Fraimic's detailed WiFi diagnostic dashboard. You can reach it by:

- Typing `fraimic.local/wifi-stats` directly in your browser (while on the same network)
- Tapping the **"Network"** card title on the `/info` page — it's a hidden link that opens the WiFi Stats page

This section walks through each part of the page so you know what you're looking at.

8.1 Health Opinion Banner

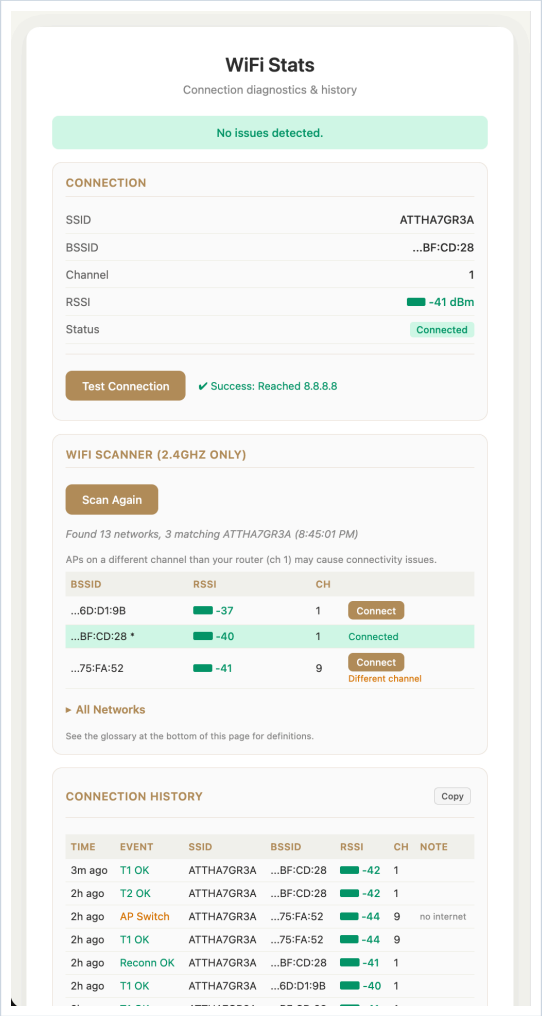


Figure 2: WiFi Stats Page — Health Opinion Banner

The first thing you see is a color-coded banner with an overall WiFi health assessment:

Color	Meaning
Green	Healthy — stable connection, good signal
Yellow	Fair — signal or reconnection issues worth checking
Red	Poor — significant connection problems

The banner includes a text summary explaining the assessment — for example, “Good signal, no recent disconnections” or “Weak signal — consider moving closer to router.”

8.2 Connection Card

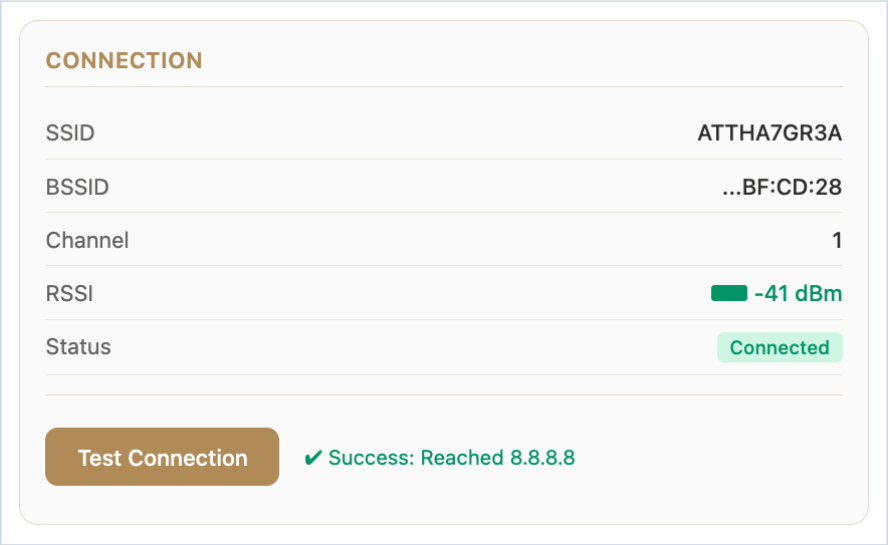


Figure 3: WiFi Stats Page — Connection Card

This card shows the frame's current WiFi connection details:

Field	Shows	Why It Matters
SSID	Network name	Confirms you're on the right network
BSSID	AP address (last 3 octets)	Which AP — router vs. extender
Channel	Current AP's channel	Diagnose channel mismatch with extenders
RSSI	Color-coded bar + dBm	Green/yellow = good, orange/red = weak
Status	Connected / Disconnected	Quick WiFi state check

Test Connection button: Tapping this runs an immediate internet reachability test (TCP connection to 8.8.8.8:53). The result appears inline — a green checkmark with "Reachable" if internet is working, or a red X with "No internet" if it isn't. This is the same test the Connectivity Monitor runs in the background, but on demand.

8.3 WiFi Scanner

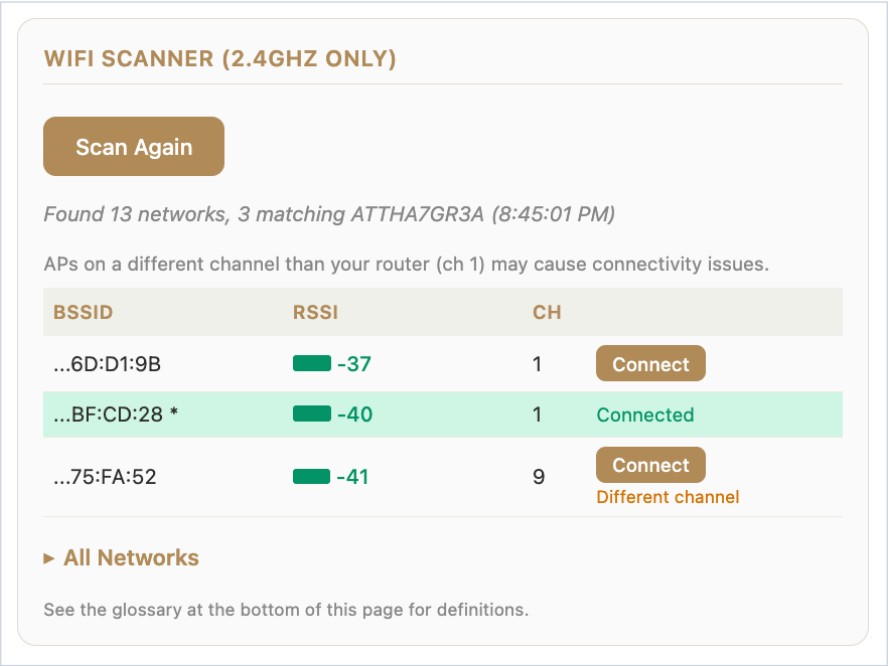


Figure 4: WiFi Stats Page — WiFi Scanner

The scanner lets you see all WiFi networks visible to the frame, with a focus on access points that match your saved network.

How to use it:

1. Tap **“Scan Now”** — the button changes to “Scanning…” while Fraimic scans all 13 channels on the 2.4 GHz band
2. Results appear in two sections:

Matching APs — Access points broadcasting your saved network name:

Column	Description
BSSID	AP hardware address (last 3 octets)
RSSI	Signal strength with color-coded bar
Channel	Channel each AP broadcasts on

Column	Description
Action	“Connected” badge, “Connect” button, or “Different channel” warning

If an access point is on a different channel than the one Fraimic is currently using, it will show an orange **“Different channel”** label. This is informational — a different channel is normal and doesn’t necessarily indicate a problem (see “Understanding WiFi Channels”).

All Networks — An expandable section showing every WiFi network the frame can see (including your neighbors’). Useful for checking interference or confirming that 2.4 GHz is enabled on a specific device.

Connect button: You can manually switch to a different access point by tapping “Connect” next to it. This is useful for testing — for example, to see if a specific extender has internet access.

8.4 Connection History

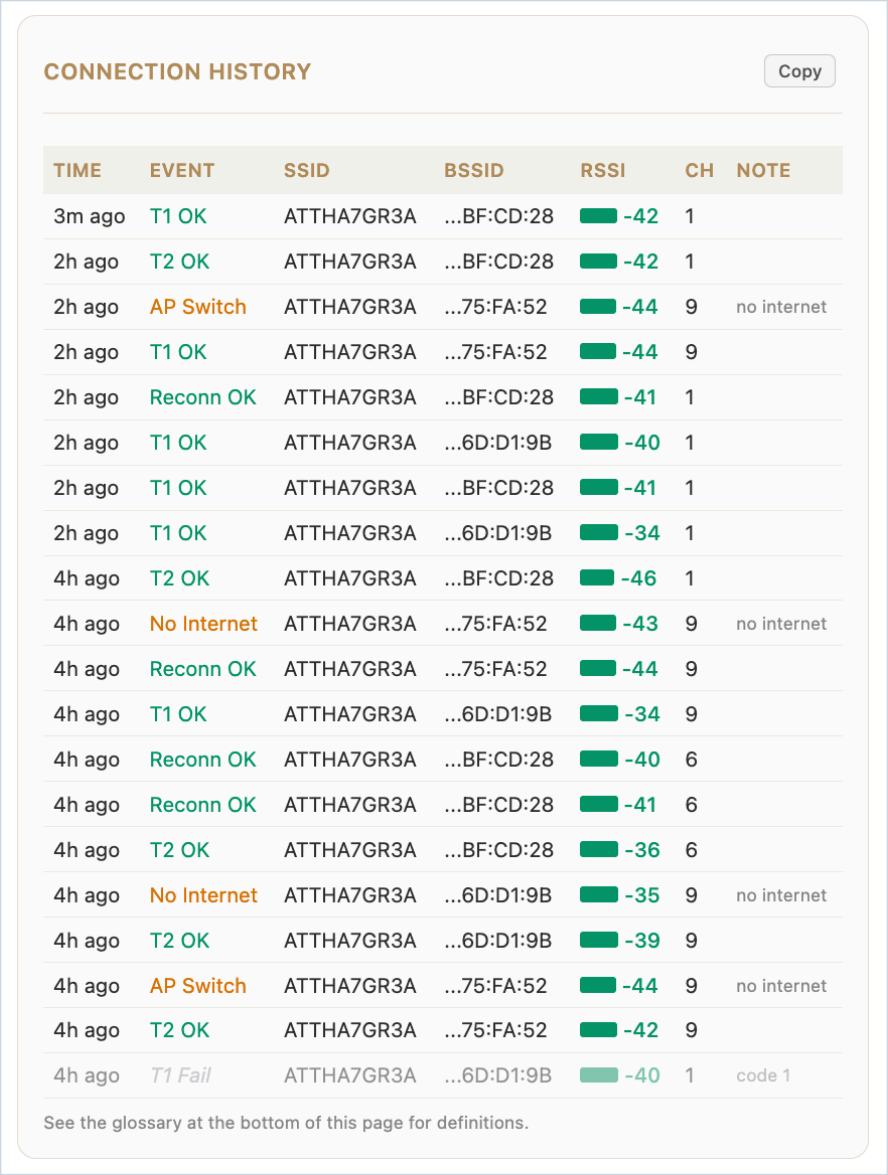


Figure 5: WiFi Stats Page — Connection History

A chronological log of Fraimic's recent WiFi events. This is the most useful section for diagnosing intermittent issues.

Event	Color	Meaning
T1 OK	Green	Tier 1 fast connect succeeded

Event	Color	Meaning
T1 Fail	Gray	Tier 1 failed — triggers Tier 2 fallback. Normal.
T2 OK	Green	Tier 2 deep scan succeeded
T2 Fail	Red	Tier 2 failed — no reachable AP found
Reconn OK	Green	WiFi dropped mid-session but recovered
Reconn Fail	Red	Mid-session reconnection failed
AP Switch	Orange	Switched AP due to no internet on previous
No Internet	Orange	WiFi connected but no internet detected
Conn Fail	Red	Both Tier 1 and Tier 2 failed

Each row also shows:

Column	Description
Time	When it happened (e.g., “42m ago”, “3h ago”)
SSID	Network involved
BSSID	AP address (last 3 octets)
RSSI	Signal strength at event time
Ch	Channel at event time
Note	Context — “wrong password,” “handshake timeout,” “no AP found,” etc.

What to look for:

- **Repeated "AP Switch" entries** — The frame keeps connecting to an AP with no internet (likely a misconfigured extender). See the extender troubleshooting section.
- **"Reconn Fail" followed by "Conn Fail"** — WiFi is dropping and the frame can't recover. Check signal strength and router stability.
- **"T1 Fail" followed by "T2 OK"** — Normal behavior. The frame's first attempt missed but the deep scan found the network. This happens when channels change or after a long sleep.
- **"wrong password" in Note** — The saved WiFi password doesn't match. Update credentials via the WiFi setup page.

The **"Copy"** button copies the entire history table to your clipboard in a text format suitable for pasting into messages or support requests.

8.5 Lifetime Counters

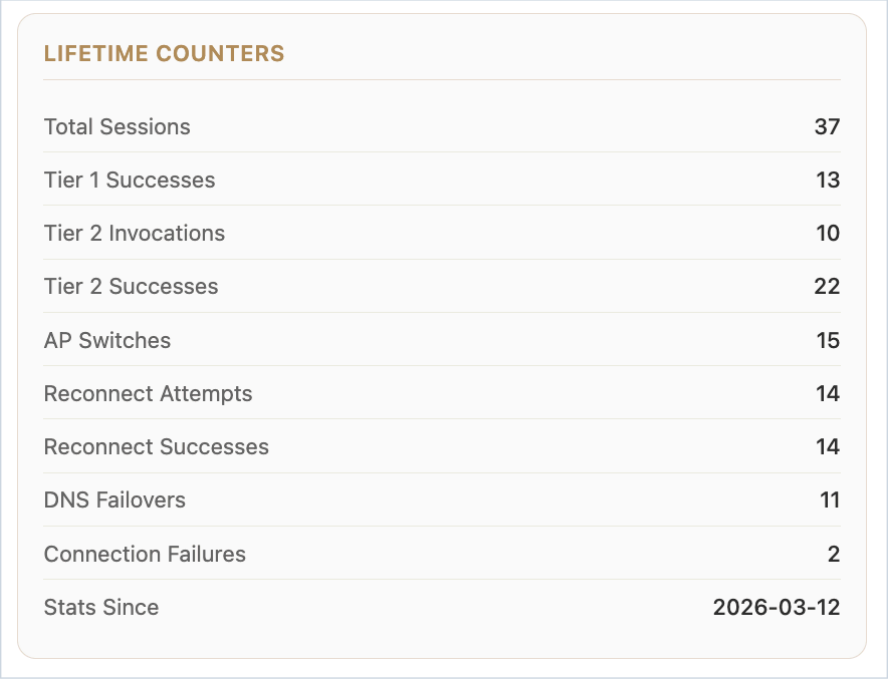


Figure 6: WiFi Stats Page — Lifetime Counters

Cumulative statistics since the frame's WiFi stats were last cleared:

Counter	Tracks
Total Sessions	Connection sessions (each boot or reconnect = 1)
Tier 1 Successes	Fast connects that worked first try
Tier 2 Invocations	Times deep scan fallback was needed
Tier 2 Successes	Deep scans that found and connected
AP Switches	AP changes due to no internet
Reconnect Attempts	Mid-session WiFi drop recovery tries
Reconnect Successes	Successful mid-session recoveries
DNS Failovers	No-internet detections triggering AP scan
Connection Failures	Complete failures (both tiers failed)
Stats Since	Counter start date (resets on clear)

How to read it: In a healthy setup, you'll see high Tier 1 Successes and low everything else. If you see AP Switches above zero, the frame has encountered an access point with no internet — worth investigating. If Connection Failures is above zero, the frame has experienced complete WiFi outages.

8.6 Clear Stats

A red **"Clear Stats"** button that resets all counters and connection history to zero. Useful after making network changes (new extender, new router, moved the frame) to get a fresh baseline. A confirmation dialog prevents accidental clears.

8.7 On-Page Glossary

An expandable glossary at the bottom of the page with quick definitions of WiFi terms and event labels. Tap to expand if you need a reminder of what a term means while reading the stats.

Troubleshooting

Orange LED Blinking (No Internet)

What you see: The LED blinks orange with a slow ~2-second cycle.

What it means: Fraimic is connected to WiFi but can't reach the internet. This has been going on for about 3 minutes.

What Fraimic is doing: Actively testing alternative access points, blacklisting ones without internet, and trying to find a working path to the internet. If your internet service is simply down (ISP outage), Fraimic will continue monitoring and recover automatically when service is restored.

What you should do:

1. **Wait 5–10 minutes** — Many issues resolve on their own (ISP blips, router reboots)
2. **Check your internet** — Can your phone browse the web? If not, the issue is your internet service, not Fraimic
3. **Check your router** — Is it powered on? Try restarting it
4. **Connect to "Fraimic_XXXXX"** — The frame's portal is accessible during outages. Visit `192.168.4.1/info` to see what the frame knows about the problem
5. **Check WiFi Stats** — If you see repeated "AP Switch" events, an extender or repeater may be the culprit (see below)

Single Red Blink When You Tap

What you see: You tap the frame to record, and the LED gives one red blink.

What it means: Recording is blocked because Fraimic can't reach the internet — artwork can't be uploaded to the server for processing.

What you should do: Wait for the orange LED to stop (internet restored), then try tapping again. If you don't see orange blinking, the internet issue may have just started — give it a minute and try again.

Fraimic Won't Connect to WiFi

Step 1: Check the network name and password - On your phone, go to WiFi settings and verify the exact network name and password - Remember: Fraimic only sees 2.4 GHz networks

Step 2: Wait for the "Fraimic_XXXXX" network - If Fraimic can't connect, it creates its own setup network after trying both Tier 1 and Tier 2 - Connect to it from your phone and re-enter your WiFi credentials - Note: even while the setup network is active, Fraimic retries your saved network every 60 seconds in the background

Step 3: Reset Fraimic's WiFi - Visit `fraimic.local/action?mode=reset` (or connect to "Fraimic_XXXXX" and use the portal) - The frame clears its WiFi settings, blanks the display, and enters deep sleep - Press the button to wake it — it will create the setup network for fresh configuration

Step 4: Check for interference - Move Fraimic closer to your router - Try again to see if it connects

Step 5: Restart your router - Power off your router for 30 seconds, then power it back on - Wait about 2 minutes for it to fully boot - Fraimic's background retry will detect the router and connect automatically — you don't need to restart the frame

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Fraimic Keeps Disconnecting

Step 1: Check signal strength - Visit `fraimic.local/info` and look at the Signal field - If it shows Fair or Weak, move the frame closer to your router or add an extender - The WiFi Stats page's Connection History will show "Reconn OK" or "Reconn Fail" entries for each disconnect/reconnect event

Step 2: Check for wireless interference - Move Fraimic away from microwave ovens, cordless phones, baby monitors, and other 2.4 GHz devices - These can cause intermittent drops

Step 3: Check band steering - Some routers have "band steering" that pushes devices from 2.4 GHz to 5 GHz. Since Fraimic can only use 2.4 GHz, this causes repeated disconnections - Check your router's settings and consider disabling band steering, or configure it to exclude Fraimic's MAC address

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Fraimic Takes Too Long to Connect

If connection takes longer than 10 seconds:

Step 1: Check signal strength - Stronger signal = faster Tier 1 connection - Move closer to your router if signal is Fair or Weak

Step 2: Check the Connection History - Visit `fraimic.local/wifi-stats` and look at the history - If you see "T1 Fail followed by T2 OK," Fraimic is falling back to the deep scan every time. This adds 5–15 seconds. Common causes: router changed channels, or extender interference - If you see "T1 OK" consistently, the connection is fast — the delay may be elsewhere (server communication, not WiFi)

Step 3: Restart Fraimic - Power off and on. The channel hint resets after a successful connection, so subsequent boots should be faster.

Can't Find the "Fraimic_XXXXX" Setup Network

Step 1: Wait longer - It takes about 30 seconds after power-on for the setup network to appear - Wait a full minute before checking

Step 2: Move closer - Make sure your phone is within 10 feet of Fraimic - The frame's built-in antenna has limited range for its own hotspot

Step 3: Restart Fraimic - Power it off, wait 10 seconds, power it back on - Wait 1 minute for the network to appear

Step 4: Forget old networks - On your phone, go to WiFi settings and forget any old "Fraimic_" networks - Power cycle Fraimic and look again

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Router + Extender Issues

If Fraimic has trouble staying connected and you have an extender or repeater, follow this diagnostic flow:

Step 1: Check What You're Connected To. Open `fraimic.local/info` and look at the Network section:

- **Signal** — Fair or Weak? The frame may be too far from both devices.
- **Channel** — Note this number.
- **AP Switches** — Any value above zero means the frame connected to an AP with no internet and had to switch. This is the most common extender problem.

Step 2: Scan for All Access Points. Open `fraimic.local/wifi-stats` and tap "Scan Now." Look at the Matching APs table:

- **Multiple entries?** Your router and extender are both visible. Expected.
- **Same channel?** If not, you'll see "Different channel" labels. This is normal — different channels don't prevent connectivity (see "Understanding WiFi Channels").
- **Signal comparison** — The frame scores APs by signal strength regardless of channel.

Step 3: Diagnose by Scenario. Scenario A — Extender on a different channel, no internet: Your extender is on a different channel than your router and isn't passing internet traffic. The channel difference itself isn't the issue — the extender's backhaul to your router is.

- Fix: Move the extender closer to your router and restart it so it gets a stronger connection to the router. Verify internet works by tapping "Connect" next to the extender in WiFi Stats, then using "Test Connection."

Scenario B — Extender has weaker signal, same channel: Normal and not a problem. Fraimic will use the router. No action needed.

Scenario C — Extender has stronger signal but no internet: Check the Lifetime Counters for AP Switches above zero. The extender is attracting the frame but can't pass internet traffic. - Fix: Check extender settings — make sure it's in "repeater," "extender," or "bridge" mode, not "router" mode. Restart after changing.

Scenario D — Extender not showing in scan: It may be off, out of the frame's range, or broadcasting 5 GHz only. - Fix: Confirm it's powered on, 2.4 GHz is enabled, and it's within range.

Scenario E — Fair or Weak signal on both: The frame is too far from everything. - Fix: Reposition the extender between the router and the frame, or move the frame closer.

Step 4: After Making Changes.

1. Restart the frame (power cycle or visit `fraimic.local/action?mode=restart`)
2. Wait for it to reconnect (normally 2–6 seconds)
3. Check `fraimic.local/info` — Signal should be Good or better, AP Switches should be "None"
4. Consider clearing stats on the WiFi Stats page to get a fresh baseline

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Best Practices

Placement Tips

Fraimic works best when: - Placed on a shelf or wall at a reasonable height (not hidden behind furniture) - Within 30 feet of your router, extender, or mesh node - Away from metal objects, mirrors, or walls with heavy metal reinforcement - Not enclosed in a cabinet or box — WiFi needs open air

Avoid: - Windowsills on exterior walls (signal escapes outside) - Basements or metal structures - Next to microwave ovens or cordless phone base stations (2.4 GHz interference)

Battery & WiFi

WiFi is one of the largest power consumers on the frame. Here's how different setups affect battery life:

Scenario	Impact	Why
Strong signal, single router	Minimal	Tier 1 connects in 2–3 sec, no scanning
Mesh network	Minimal	Strong nearby node, fast connections
Weak signal	Moderate	May need multiple scan attempts
Extender, different channel	Low–Moderate	Tier 1 may miss the extender if channel hint doesn't match; Tier 2 finds it reliably
Extender, no internet	High	Failover scanning consumes extra power
Router offline at boot	High	Background retry every 60 sec until recovered

Key point: A stable WiFi connection with good signal is the single most important factor

for battery life. If your frame is draining faster than expected, check signal strength first.

Monitoring Connection Health

Visit these pages periodically to check on your frame:

- **`fraimic.local/info`** — Quick overview: signal strength, channel, connection status
- **`fraimic.local/wifi-stats`** — Detailed diagnostics: connection history, scan results, lifetime counters

Signs of a healthy setup: - Tier 1 Successes is high relative to Total Sessions - AP Switches is zero - Connection Failures is zero - Signal is Good or better on the Connection card

Changing Your WiFi Network

If you change your WiFi password or switch to a different network:

Option A — Frame is on your network (or in setup mode): 1. Visit `fraimic.local/wifi` from your phone, or connect to the "Fraimic_XXXXX" network and go to `192.168.4.1` 2. Select your new network and enter the password 3. Tap Restart to apply

Option B — Frame can't connect at all: 1. Wait for the "Fraimic_XXXXX" setup network to appear (it will, after both connection tiers fail) 2. Connect to it and configure the new network 3. Tap Restart to apply

A factory reset (`fraimic.local/action?mode=reset`) is only needed if you want to clear all device settings and start completely fresh.

Reporting WiFi Issues

When reaching out for help, include the following — it gives us everything we need to diagnose quickly:

Include	How to Get It
Info page	`fraimic.local/info` — signal, channel, BSSID, status
WiFi Stats	`fraimic.local/wifi-stats` — tap “Scan Now” first
Connection History	Scroll down on WiFi Stats, or tap “Copy” for text
Extender/mesh model	Make and model so we can check known quirks
Physical layout	Where frame, router, extender are (e.g., “router in living room, frame in bedroom”)
Power state	Battery, plugged in, or always-awake — affects retry intervals

Glossary of Terms

A reference for terms used throughout this guide and on Fraimic's diagnostic pages.

Network Concepts

Term	Definition
SSID	The name of a WiFi network (e.g., "HomeNet"). Multiple devices can broadcast the same SSID — your router and extender often share one.
BSSID	The unique hardware address (MAC address) of a specific access point. While your router and extender may share the same SSID, each has its own BSSID. Fraimic uses BSSIDs to distinguish between access points on the same network.
RSSI	Received Signal Strength Indicator — a measurement of WiFi signal quality, expressed in dBm (e.g., -45 dBm). More negative = weaker. See the Signal Strength table below.
Channel	WiFi broadcasts on numbered channels (1–13 on the 2.4 GHz band). Only channels 1, 6, and 11 are fully non-overlapping, meaning they don't interfere with each other. Your router and extender may use the same or different channels — different channels are normal and don't prevent connectivity.
2.4 GHz	The WiFi frequency band Fraimic uses. It has longer range and better wall penetration than 5 GHz, but lower maximum speed. Fraimic only needs brief data bursts, so 2.4 GHz is ideal.
5 GHz	A faster WiFi band with shorter range. Fraimic cannot see or connect to 5 GHz networks — they are completely invisible to it.

Term	Definition
Band Steering	A router feature that automatically pushes devices from 2.4 GHz to 5 GHz for faster speeds. Since Fraimic can only use 2.4 GHz, band steering can cause it to be repeatedly kicked off and reconnected.
Subnet	A range of IP addresses that devices use to communicate on a local network. Devices on different subnets often can't reach each other or the internet properly. Travel routers in "router mode" create a separate subnet.
APSTA Mode	A WiFi mode where Fraimic acts as both a client (connected to your router) and a hotspot (broadcasting "Fraimic_XXXXX") simultaneously. This allows you to access the portal while Fraimic continues trying to resolve connectivity issues in the background.

Device Types

Term	Definition
Router	Your primary WiFi device. Connects to your ISP (internet service provider) and broadcasts WiFi throughout your home.
Extender / Repeater	A device that rebroadcasts your router's WiFi signal to extend coverage. Uses the same SSID but receives and retransmits each packet, which roughly halves throughput.
Access Point (AP)	Similar to an extender but connected to your router via ethernet cable. Provides a stronger, more reliable connection because it doesn't rely on wireless backhaul.
Bridge	A device that connects to your router's WiFi and shares that connection with other devices. Devices behind a bridge get their IP addresses from your main router, making the bridge transparent to the network.

Term	Definition
Travel Router	A small portable router. In its default “router mode,” it creates a separate network with its own subnet — problematic for IoT devices. In “bridge” or “AP” mode, it acts transparently.
Mesh Network	A system of multiple nodes that work together to provide seamless WiFi coverage. All nodes share one SSID and coordinate to hand off devices between them.

Fraimic-Specific Terms

Term	Definition
Tier 1	Fraimic’s fast connection method. Uses a quick scan with channel hints from the last session to connect in 2–3 seconds.
Tier 2	Fraimic’s thorough fallback method. Performs a full channel scan, scores all matching access points by signal strength, and tries each one in order. Takes 5–15 seconds.
Background Retry	When both Tier 1 and Tier 2 fail (e.g., router is offline), Fraimic retries every 60 seconds in the background while keeping its portal accessible.
AP Failover	When Fraimic detects that it’s connected to WiFi but has no internet, it blacklists the current access point and switches to an alternative.
Fraimic_XXXXX Network	A temporary WiFi hotspot created by the frame. Used during first-time setup, when WiFi connection fails, or when internet is unavailable — so you can always access the portal.
Connectivity Monitor	A background process that checks internet reachability every 60 seconds (more frequently during outages) and triggers AP failover if needed.

Signal Strength Reference

RSSI Range	Quality	What It Means
-30 to -50 dBm	Excellent	Very close to access point. Fast, reliable connection.
-50 to -60 dBm	Good	Normal operating range. Reliable for all Fraimic functions.
-60 to -70 dBm	Fair	Usable, but may experience occasional slowness.
-70 to -80 dBm	Weak	Connection may drop. Consider moving the frame or adding an extender.
Below -80 dBm	Poor	Unreliable. Fraimic will struggle to maintain a connection.

This guide covers Fraimic firmware v0.2.15. For the latest version, check with your Fraimic contact.