dvb-WarpPool

Your own Bitcoin solo-mining pool

Installation & User Manual

Docker · Native package · Raspberry Pi · from source

Version 1.52.0 · Edition November 2026

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1 · What is dvb-WarpPool?

dvb-WarpPool turns your own machine into your own Bitcoin mining pool. Run it **privately** — your miners point at your host and **every block reward — and every transaction fee — goes straight to your own Bitcoin address** — or open it up as a **public 0% pool** where any visiting miner mines to *their* own address. Either way: no pool operator, no pool fee, no account.

> **Two ways to run it.** This manual covers the common case — a private solo pool for your own rigs or a fixed group of friends. To run an **open, non-custodial 0% pool** that strangers can point their miners at (per-worker payouts, privacy controls, public hardening), see the separate **Public 0% Solo Pool Operator Manual** at `docs.warppool.org/public-pool-guide.html`.

It is a **solo pool**: your miners work together on the same block template built from your own Bitcoin node. When one of them finds a block, the full reward is paid to the payout address you configure. Until then, nothing leaves your machine.

Why run your own pool?

- **Full self-custody.** Rewards are paid by the Bitcoin network directly to your address — the pool never holds your coins.
- **Privacy.** Your hashrate, your miners and your work never touch a third-party server.
- **Your node, your rules.** Blocks are built from your own mempool and broadcast by your own Bitcoin node.
- **A real dashboard.** Live hashrate, per-miner statistics, hardware detection, energy cost, notifications and more.

> **Good to know:** Solo mining is a lottery. A block is found rarely and unpredictably, in proportion to your share of the total network hashrate. dvb-WarpPool does not change those odds — it gives you a private, transparent, self-hosted way to take part, and pays you directly when luck strikes.

A few quirks worth knowing up front

This manual is written for a complete beginner. Before we dive in, three small things will save you confusion later — they come up again in context:

- **Three menu labels are easy to mix up.** The menu items **Workers**, **Miners** and **Devices** lead to three different pages, and the names are easy to mix up (Workers = wallets, Miners = Stratum logins, Devices = the hardware). Always go by the *menu label*. Chapter 7 explains each one.
- **Comfort settings are per-device.** Language, screensaver, your personal card layout and browser notifications are stored in *this* browser only — set them again on each device you use.
- **There are four size profiles:** Small, Medium, Large and Enterprise. (If you ever see the internal name "gross", that is simply the "Large" profile.)

> **About the screenshots.** The screenshots in this manual come from a local test pool with simulated miners and sample data. The exact numbers, worker names, block counts and statuses are illustrative — a real pool shows your own figures (and, unlike a quick test run, far fewer rejected blocks).

2 · Before you start

You need four things. All of them are quick to check.

Requirement	Details
A host	Any Linux or macOS machine, a NAS, or a Raspberry Pi 5 — anything that can run a container or a native binary and stays on.
Bitcoin Core	Your own **Bitcoin Core** node (v27.0 or newer recommended), fully synced, with the `getblocktemplate` RPC and ZMQ block notifications enabled. See the box below for the exact settings. The setup wizard can even write this for you.
A Bitcoin address	A receive address from a wallet you control (for example `bc1q…`). This is where a found block pays out. **Never use a private key** — only a public receive address.
A miner	Any Bitcoin ASIC or hobby miner that speaks Stratum: Bitaxe, NerdAxe, NerdMiner, Avalon, Antminer, and so on.

Preparing Bitcoin Core

dvb-WarpPool builds block templates from your node and gets instant notifications when a new block arrives. Add these lines to your `bitcoin.conf` and restart Bitcoin Core:

```
server=1
txindex=1
zmqpubhashblock=tcp://127.0.0.1:28332
zmqpubrawblock=tcp://127.0.0.1:28333
```

The RPC user/password (or the `.cookie` file) is read by the setup wizard. If the pool runs on a *different* machine than the node, also set `rpcbind` and `rpcallowip` accordingly.

The wizard can do this for you. If you'd rather not edit files, skip ahead — the setup wizard (chapter 4) detects Bitcoin Core, and offers a one-click button to write a ready-made `bitcoin.conf` and restart the node.

Syncing takes time. A fresh node must download the blockchain before it can build templates. Let it reach 100 % before you expect the pool to mine. The wizard shows the node's sync progress in the meantime.

Pruned node? A pruned node works fine for solo mining; the pool only needs the current chain tip and your mempool. `txindex` is optional but recommended for the most robust reorg handling.

3 · Installing dvb-WarpPool

Pick whichever fits your host. All paths end at the same setup wizard on port `8331` (chapter 4); once you finish it, the pool itself runs on `http://<host>:18334`.

Option A — Docker (any Linux/macOS host or NAS)

The multi-arch image runs on amd64 and arm64. For the very first start, run the setup wizard from the image and publish its port `8331`:

```
mkdir -p ~/.warppool/config
docker run --rm -it -p 8331:8331 \
  -v ~/.warppool:/data -v ~/.warppool/config:/config \
  git.warppool.org/dvb-projekt/dvb-warppool:latest \
  dvb-warppool-setup --bind 0.0.0.0:8331 \
  -c /config/config.toml -s /config/secrets.toml --data-dir /data
```

`--rm` removes this helper container when the wizard ends, `-it` keeps it in your terminal so you see what it prints, and `--bind 0.0.0.0:8331` lets the wizard answer from outside the container. Because of that, the wizard prints a one-time address with a token when it starts (chapter 4 shows what it looks like). After the wizard, start the pool itself:

```
docker run -d --name warppool --restart unless-stopped \
  -p 18334:18334 -p 3333:3333 \
  -v ~/.warppool:/data -v ~/.warppool/config:/config \
  git.warppool.org/dvb-projekt/dvb-warppool:latest
```

`-d` runs the pool in the background, `--restart unless-stopped` brings it back after a reboot of the host. Port `18334` is the web UI, `3333` is Stratum V1 for your miners. Add `-p 3334:3334` for the TLS Stratum port and `-p 34254:34254` for Stratum V2 once you switch those on (chapter 11). The two `-v` volumes keep your settings and database across restarts.

The two volumes matter. The wizard writes `config.toml` and `secrets.toml` to `/config`, which is the folder `~/.warppool/config` on your host, and the pool reads them from there on every start; `~/.warppool` itself (`/data`) holds the database. Without `-v ~/.warppool/config:/config` the wizard's settings would vanish with its helper container and the pool would not start. On Linux the container runs as user 1000, so give that user the folder once, right after the `mkdir` and before the wizard's first start: `sudo chown -R 1000:1000 ~/.warppool`. `--data-dir /data` tells the wizard where the database of an earlier install lies, so it can offer to keep it or set it aside.

Your node's address. Inside the container `127.0.0.1` is the container itself, not your computer. In the wizard, enter the IP address of the machine that runs Bitcoin Core (for example `192.168.1.20:8332` for RPC and `192.168.1.20:28332` for ZMQ), and make sure Bitcoin Core accepts RPC and ZMQ from that address (`rpcallowip` , `rpcbind` , `zmqpubhashblock` on an address the container can reach).

Listen addresses and IPv6 in Docker (since v1.51). The image no longer fixes the addresses the pool listens on: they come from `config.toml`. The defaults `pool_listen = ":3333"` and `status_listen = ":18334"` mean "IPv4 on every network interface", so an existing install behaves as before. To let miners and browsers reach the pool over **IPv6**:

- switch IPv6 on for the container's network — in Docker Compose that is `networks: default: enable_ipv6: true`;
- set `pool_listen`, `status_listen` and, if you have switched them on, `stratum_tls_listen` and `sv2_listen` to `"[::]:PORT"`, for example `pool_listen = "[::]:3333"` (`[::]` means "every interface"; IPv4 miners can still connect).

Only do this when the network really has IPv6: in a container without an IPv6 network Docker switches IPv6 off, and a `"[::]"` address then fails to open. Two more traps: the image's built-in health check asks `127.0.0.1:18334`, so if you move the web UI to another port the container shows as "unhealthy" until you override the health check; and a `status_listen` on a loopback address such as `127.0.0.1:18334` is reachable only inside the container, never from outside.

Option B — Native package (Debian/Ubuntu, Fedora, Windows, AppImage)

Download the matching file from the latest release and install it:

```
sudo apt install ./dvb-warppool_1.52.0-1_amd64.deb
sudo systemctl enable --now dvb-warppool
```

Also available: `.rpm` (Fedora/RHEL), `.AppImage` (portable Linux) and an unsigned `.dmg` (macOS). The Windows `.msi` is paused for now (there is no Windows build runner); on Windows run the pool via Docker/WSL or build it from source.

Option C — Raspberry Pi 5 (arm64)

```
wget …/releases/download/v1.52.0/dvb-warppool_1.52.0-1_arm64.deb
sudo dpkg -i dvb-warppool_1.52.0-1_arm64.deb
sudo systemctl enable --now dvb-warppool
```

Storage on a Pi: prefer an NVMe HAT or a USB-3 SSD over an SD card. The pool's database is write-heavy under sustained load and wears SD cards quickly.

macOS note. The `.dmg` is not signed with an Apple Developer ID and not notarized yet — after mounting it, run `xattr -dr com.apple.quarantine /Applications/dvb-WarpPool.app` once so Gatekeeper lets it start.

Verify your download. Every release ships a signed `SHA256SUMS` and a software bill of materials, and the container image is reproducible and digest-pinned. Check the signature if you mine on mainnet.

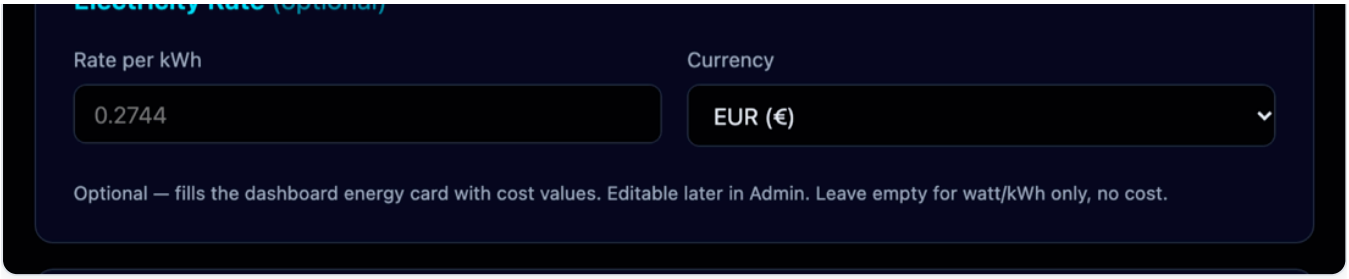
4 · First launch: the setup wizard

The first time you open the pool, a **setup wizard** runs at `http://<host>:8331`. It is *one long page you scroll down*, not a click-through sequence — you fill in the cards from top to bottom and press a single button at the very end. When you finish, the wizard hands off to the real pool interface on port `:18334` and shuts itself down.

> **The wizard does *not* ask for an admin password.** You set up the admin login later, the first time you open the Admin area (chapter 9). The wizard is only about your node, your payout address and your hardware.

> **The wizard's one-time token (since v1.50).** The wizard can write your configuration, so it only answers people it can trust. Started on the same machine (the native packages, the macOS app) it listens on `127.0.0.1` and only serves a browser on that machine, at `http://localhost:8331`. In Docker it has to listen on every interface, so on start it prints a one-time address into its output — the terminal you started it in, or `docker logs <container>` for a container running in the background:
>
> `Browser öffnen: http://<address-of-this-machine>:8331/?token=…`
> `(on this machine: http://localhost:8331/?token=…)`
>
> Open exactly that address, with the long `?token=…` part. Without the token the wizard only shows a short notice and nothing can be changed. The token is valid until the wizard ends; the next start prints a new one. On Umbrel none of this applies: the wizard sits behind the Umbrel login.


EN
dvb-WarpPool
First-Run Setup — Bitcoin Solo Pool
Hardware
OS
Darwin 27.2
Architecture
arm64 (bare)
CPU
Apple M2 Pro
Cores
12 physical / 12 logical
RAM
32768 MB total / 20662 MB available
Disk free
232660 MB
Recommendation: small (≤5 Miner)
Hardware handles up to: enterprise
Mining
Pool type
Private solo pool
Public 0% pool
Every block reward goes to your own payout address. For self-mining or a fixed group of friends.
Payout address (required)
bc1q...
Block reward lands here (coinbase output #1). Solo wallet address, never a private key.
Expected miners
5
Determines the recommended profile.
Pool fee (%)
0
Default 0 = "No pool fee". Only for multi-user solo / hosting.
Server location
Location
Shown in the status endpoint + block-found notifications. Brand name (dvb-WarpPool) is fixed.
Electricity Rate (optional)



The wizard is one scrolling page: hardware, mining, location and electricity at the top.

Language picker (top-right)

A flag + language code with a small ▾ arrow lets you switch between eight languages (Deutsch, English, Español, Português BR, Français, Italiano, 日本語, 中文). Pick yours first so the rest of the wizard reads in your language.

The "Hardware" card (read-only)

Purely informational — nothing to fill in. It shows your operating system, architecture, CPU, core count ("x physical / y logical"), RAM and free disk. Below that, a recommendation box suggests a **size profile** based on how many miners you expect: Small (≤5), Medium (≤20), Large (≤100) or Enterprise (>100). A second line, "hardware can handle up to …", tells you the largest profile your machine could support. Both update live as you change the "Expected miners" field below. If your machine is tight on RAM or disk, or you're on a 32-bit ARM board or a Raspberry Pi with an SD card, a warning appears here.

The "Mining" card — the important one

Field	What to enter
Pool type	Choose **Private solo pool** (the default) or **Public 0% pool**. A private pool pays every block to *your* payout address — for mining your own rigs or a fixed group of friends. A public pool lets any visiting miner mine to *their* own address (taken from their Stratum login): the full reward goes straight to whoever finds the block, and you take no fee. Picking **Public 0% pool** hides the payout-address and fee fields below, because they aren't used in that mode.
Payout address (required)	Your own Bitcoin receive address — this is where a found block's full reward is paid (coinbase output #1). The wizard validates the format (`bc1` , `tb1` , `bcrt1` , or a legacy `1` / `3` address). **Only a public receive address — never a private key.** *(Hidden for a public 0% pool.)*
Expected miners	How many miners you plan to connect (default 5, minimum 1). This chooses your starting size profile and the initial difficulty range. You can change it later in Admin.
Pool fee (%)	Default `0` ("No Pool Fee") — leave it at zero for a true solo pool where you keep everything. A non-zero fee (0–50 %) only makes sense if you host mining for other people. *(Hidden and forced to 0 for a public 0% pool.)*
Pool fee address	Appears only if the fee is above 0, and then it is required — the address that receives the fee slice.

The public-pool option is the whole switch for running a non-custodial, 0%-fee solo pool that strangers can point their miners at. For everything that involves — what miners enter, wallet pages, hardening and the optional donation card — see the **Public 0% Solo Pool** chapter in the online handbook.

The "Server location" card

A free-text label (pre-filled, editable) that appears in your pool's status and in block notifications — for example "my basement". Cosmetic; it does not affect mining.

The "Electricity rate" card (optional)

Enter your price per kWh and pick a currency (default EUR, 19 currencies) so the dashboard can show running energy cost. Leave the rate empty to show kWh only, without a money figure.

The "Solar PV" card (optional)

If you run solar, the pool can show how much of your mining is covered by sunshine. Choose one of the provider cards: **No, set up later** (default), **Anker Solix**, **Home Assistant**, or **Generic HTTP**. Each provider reveals its own fields — a snapshot URL (default `http://127.0.0.1:8765/snapshot.json`), and for Home Assistant a token plus the PV and load entity IDs, and optional battery sensors if you have a home battery. Every active provider also asks for an "Excess rate (€/kWh)" and a "Surplus buffer (W)". A **Test connection** button pings the URL and shows the current PV and house load so you can confirm it works before saving.

The "Restore" card (only if old data is found)

If the wizard finds data from a previous install, it offers checkboxes to restore your saved state (best shares, worker data — on by default) and restore saved configs (on by default). Leave the defaults unless you're migrating.

The "Bitcoin Core — Installation" card

The wizard looks for `bitcoind` on your machine. If it finds it, you get a green ✓ with the version and path (and, on macOS, a button to start the service via Homebrew). If it doesn't, you get a red ✗ with a one-click install button (macOS/Homebrew, with a live log) and a copy-ready install command for your operating system, a download link, and the key facts (roughly 700 GB of disk, 1–3 days for the initial sync, and a note about `prune=550` for a smaller footprint). An "I've installed it" button lets you point the wizard at your `bitcoind` once it's ready.

Solar PV (optional)

If you have a solar PV system, the pool can automatically drop the electricity rate to 0 €/kWh whenever there is PV surplus, and track where each kWh came from (solar, battery or grid).

Provider

No, set up later	Anker Solix	Home Assistant	Generic HTTP

You can leave this empty and set it up later via Admin or config.toml. The choice here only writes the [mining.electricity.solar] block into the config file.

Bitcoin Core — Installation

✓ **Bitcoin Core is installed**

Bitcoin Core daemon version v31.0.0 bitcoind

`/opt/homebrew/bin/bitcoind`

If the RPC connection below fails: check whether bitcoind is running (e.g. `bitcoind -daemon` or `brew services start bitcoin`) and the `~/.bitcoin/.cookie` file exists.

✓ macOS sleep mode disabled

The pool launcher automatically prevents system sleep while the daemon is running (via macOS `caffeinate`). This is necessary so that Bitcoin Core and the Stratum connections stay reachable around the clock. Display sleep keeps working — you can let the screen go dark.

▸ Why is this needed?

Bitcoin Core

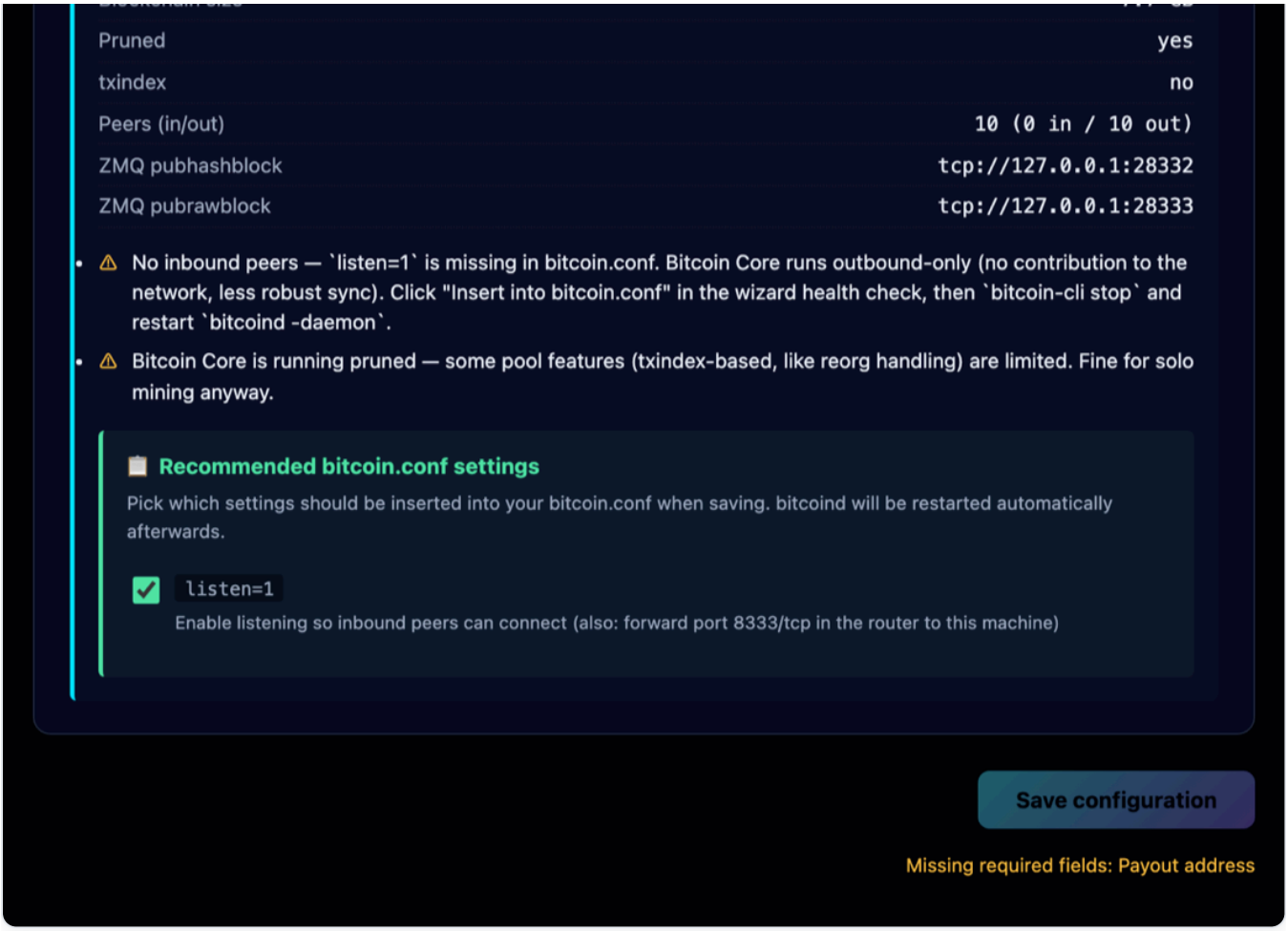
✓ Defaults from `/Users/you/Library/Application Support/Bitcoin/bitcoin.conf` · Network: **main**

RPC	ZMQ HASHBLOCK	ZMQ RAWBLOCK
✓ Block 977921	✓ :28332 open	✓ :28333 open

▸ Other network (testnet/signet/regtest) — load bitcoin.conf manually

⚠ Bitcoin Core reachable

Version	310000
Subversion	/Satoshi:31.0.0/
Chain	main
Block height	977921 / Headers 977921
Sync	100.00 %
IBD	no
Blockchain size	7.7 GB



Further down: optional solar, and the live Bitcoin Core health check with its three traffic lights.

The "Bitcoin Core" health-check card

This is where the wizard confirms your node is reachable. Three traffic-light tiles show the state of **RPC**, **ZMQ hashblock** and **ZMQ rawblock** — green means OK, yellow means "not set", red means an error.

- **If a light is not green, an override box appears** for that item: the RPC URL / user / password / cookie path, the ZMQ hashblock URL, or the ZMQ rawblock URL. There is also a button **"Create Bitcoin Core mainnet config"** that writes a complete `bitcoin.conf` for you (with `prune=8000`, `dbcache=1024` and the ZMQ endpoints).
- An expandable **"Other network (testnet/signet/regtest)"** section lets you point at a non-mainnet `bitcoin.conf`.
- When the check succeeds, a result box lists your node's version, chain, block height and headers, sync %, whether it's still doing its initial download (IBD), on-disk size, pruned/txindex status, peer counts and ZMQ status. Warnings appear for common issues (still syncing, few peers, no inbound connections, no ZMQ, pruned).
- A checklist, **"Recommended bitcoin.conf settings"** (all ticked by default: `zmqpubhashblock`, `zmqpubrawblock`, `maxconnections`, `listen`), is merged into your config when you save — and the wizard restarts `bitcoind` for you.

Finishing: "Save configuration"

The final button is disabled until every required field is filled — a live hint lists what's still missing (payout address, RPC URL, ZMQ hashblock, and a fee address if you set a fee). When you click it, the wizard writes

your config, applies the recommended `bitcoin.conf` settings, restarts Bitcoin Core, and shows a "Setup complete" screen with an **Open Pool UI** button (it opens automatically after about a second and a half).

> **macOS sleep.** On a Mac the wizard shows a small note explaining that it keeps the machine awake (`caffeinate`) so mining isn't interrupted when the screen sleeps. Nothing to do — it's informational.

5 · The dashboard, tile by tile

The dashboard is your pool's home screen — a live view of everything at once. Before the cards, let's read the bar that sits at the top of *every* page.

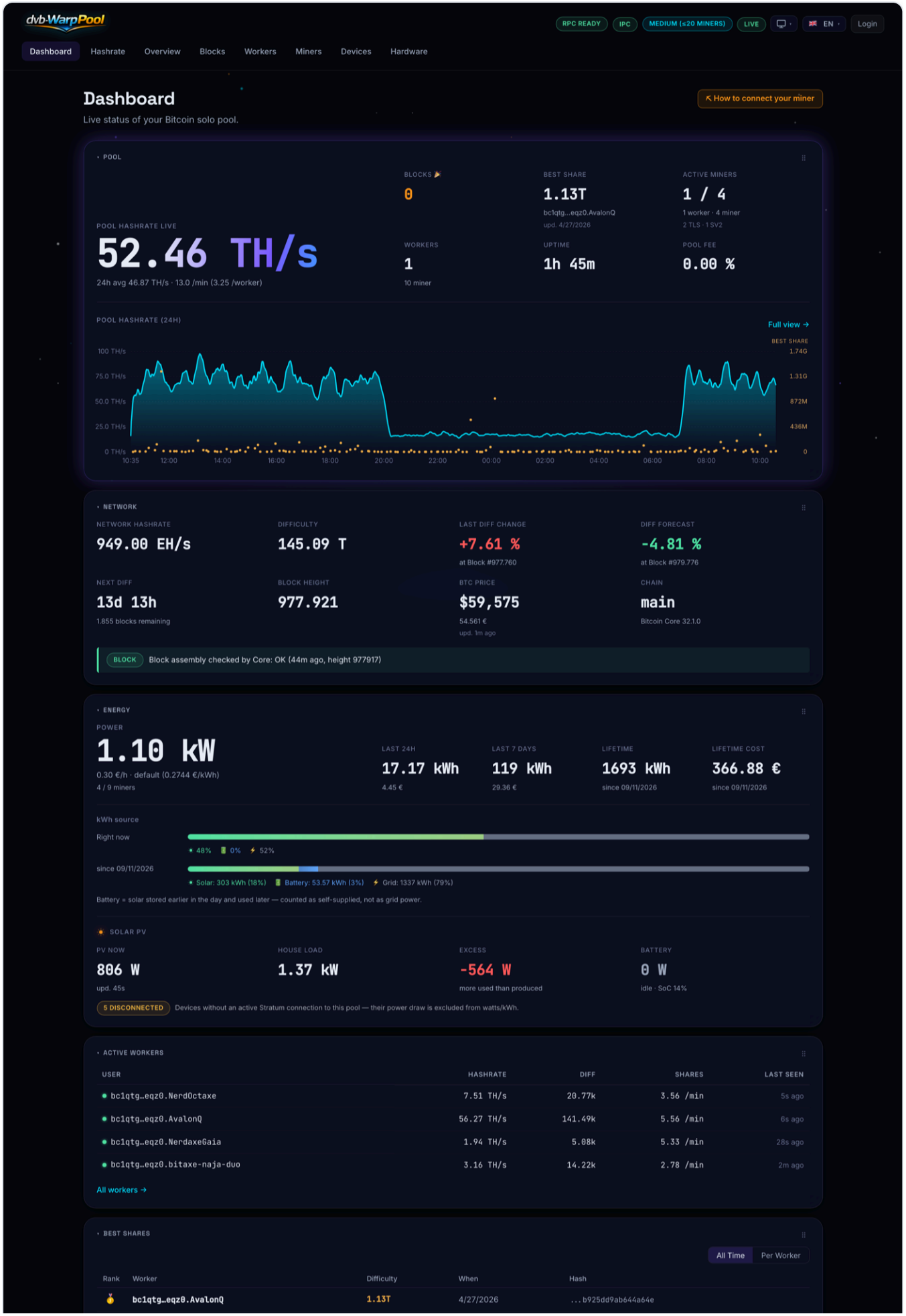
The header and status bar (on every page)

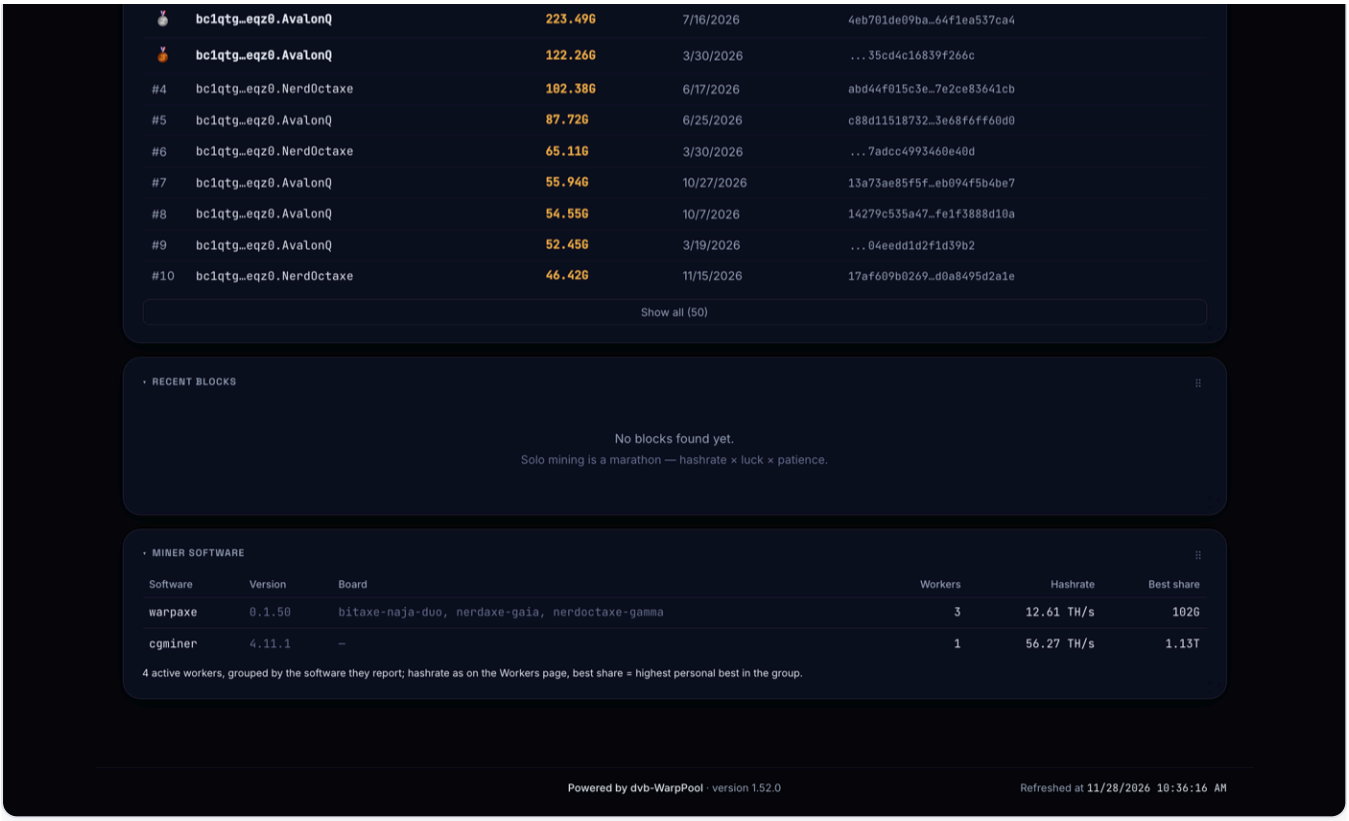
On the left is your pool's **logo** (a link back to the dashboard). Next to it is the **navigation**, with the active tab highlighted. On the right is a cluster of small status badges:

Badge	What it tells you
rpc ready / rpc waiting	Green "ready" = the Bitcoin node is reachable and the pool can build work. Yellow "waiting" = the pool is still waiting for the node (usually during startup or sync).
GBT / IPC	Where the pool gets its block templates. "GBT" = getblocktemplate + ZMQ, the proven default. Green "IPC" = Bitcoin Core's IPC interface, which delivers new work faster (Admin → Bitcoin Core, chapter 9).
Profile (cyan)	Your active size profile, e.g. "Small (1–5 miners)".
live / live off	Green "live" = real-time updates are streaming and the page refreshes instantly. Yellow "live off" = the stream dropped and the page falls back to polling every 30 seconds. Red "offline" = the API is unreachable. A brief flicker is cosmetic and does not affect mining.
Display (monitor icon ▾)	Opens the screensaver / kiosk settings (chapter 12).
Language	Switches the interface language instantly (remembered per browser).
Login / Logout	When logged out, a "Login" link. When logged in, your username with a ⏻ icon to log out.

On a phone the header scrolls away with the page, and the navigation becomes a single line you swipe sideways. While more menu items are hidden off to the right, the line fades out and a small › sits at its right edge — swipe the menu, the › itself is not a button.

The **footer** shows your brand name (if you set one), "Powered by dvb-WarpPool · version X", and "Refreshed at …" with a timestamp. If the operator has configured legal pages, a "Terms of Use" and "Privacy Policy" line appears too (not present in the standard solo setup).


dvb-WarpPool
RPC READY
IPC
MEDIUM (≤20 MINERS)
LIVE
EN
Login
Dashboard
Hashrate
Overview
Blocks
Workers
Miners
Devices
Hardware
Dashboard
Live status of your Bitcoin solo pool.
How to connect your miner
POOL
BLOCKS
0
BEST SHARE
1.13T
bc1qtg…eqz0.AvalonQ
upd. 4/27/2026
ACTIVE MINERS
1 / 4
1 worker · 4 miner
2 TLS · 1 SV2
POOL HASHRATE LIVE
52.46 TH/s
24h avg 46.87 TH/s · 13.0 /min (3.25 /worker)
WORKERS
1
10 miner
UPTIME
1h 45m
POOL FEE
0.00 %
POOL HASHRATE (24H)
Full view →
BEST SHARE
100 TH/s
75.0 TH/s
50.0 TH/s
25.0 TH/s
0 TH/s
1.74G
1.31G
872M
436M
0
10:35
12:00
14:00
16:00
18:00
20:00
22:00
00:00
02:00
04:00
06:00
08:00
10:00
NETWORK
NETWORK HASHRATE
949.00 EH/s
DIFFICULTY
145.09 T
LAST DIFF CHANGE
+7.61 %
at Block #977.760
DIFF FORECAST
-4.81 %
at Block #979.776
NEXT DIFF
13d 13h
1.855 blocks remaining
BLOCK HEIGHT
977.921
BTC PRICE
$59,575
54.561 €
upd. 1m ago
CHAIN
main
Bitcoin Core 32.1.0
BLOCK
Block assembly checked by Core: OK (44m ago, height 977917)
ENERGY
POWER
1.10 kW
0.30 €/h · default (0.2744 €/kWh)
4 / 9 miners
LAST 24H
17.17 kWh
4.45 €
LAST 7 DAYS
119 kWh
29.36 €
LIFETIME
1693 kWh
since 09/11/2026
LIFETIME COST
366.88 €
since 09/11/2026
kWh source
Right now
48%
0%
52%
since 09/11/2026
Solar: 303 kWh (18%)
Battery: 53.57 kWh (3%)
Grid: 1337 kWh (79%)
Battery = solar stored earlier in the day and used later — counted as self-supplied, not as grid power.
SOLAR PV
PV NOW
806 W
upd. 45s
HOUSE LOAD
1.37 kW
EXCESS
-564 W
more used than produced
BATTERY
0 W
idle · SoC 14%
5 DISCONNECTED
Devices without an active Stratum connection to this pool — their power draw is excluded from watts/kWh.
ACTIVE WORKERS
USER
HASHRATE
DIFF
SHARES
LAST SEEN
bc1qtg…eqz0.NerdOctaxe
7.51 TH/s
20.77k
3.56 /min
5s ago
bc1qtg…eqz0.AvalonQ
56.27 TH/s
141.49k
5.56 /min
6s ago
bc1qtg…eqz0.NerdaxeGaia
1.94 TH/s
5.08k
5.33 /min
28s ago
bc1qtg…eqz0.bitaxe-naja-duo
3.16 TH/s
14.22k
2.78 /min
2m ago
All workers →
BEST SHARES
All Time
Per Worker
Rank
Worker
Difficulty
When
Hash
bc1qtg…eqz0.AvalonQ
1.13T
4/27/2026
...b925dd9ab644a64e



The dashboard: the Pool card with the live hashrate and the 24-hour chart, then the Network and Energy cards.

How the cards behave

The dashboard is a column of cards. Click a card's **title** to collapse or expand it (the ▾/▸ arrow shows its state). To **re-order** the cards, grab the ⠿ **handle** at a card's right edge ("Drag to reorder") and drop it where you want it; this works with a mouse and with a finger, and **Esc** cancels a drag. Your arrangement is remembered in *this* browser. Two controls sit at the bottom when you've changed things or you're logged in: **"↺ Reset layout"** (back to the default) and, for admins only, **"Save layout as default"** (makes your arrangement the pool-wide default for everyone who hasn't set their own).

If the pool can't reach its own backend, a red banner appears after two failed tries: "API unreachable:" with the error, then "Daemon running?".

The "Pool" card — your pool at a glance

The first card is the big one. On the left, in large type, is **Pool Hashrate Live**: your pool's combined speed right now, auto-scaled to the right unit. It is taken from the last *complete* time bucket, because the bucket that is still filling would always read too low. The line underneath reads "24h avg … · … /min (… /worker)": the 24-hour average, the rate at which shares are coming in (per minute, or per second once it passes 60 a minute) and that rate per active miner.

On the right are six tiles:

Tile	Meaning
Blocks 🎉	How many blocks your pool has found (orange).
Best Share	The single hardest (highest-difficulty) share ever submitted, shown compactly (e.g. "3.40G"). Below: the worker and when. A "luckiest attempt" high score — it has no monetary value.
Active miners	Active wallets / active miners, with a breakdown below and how many of them use TLS or Stratum V2.
Workers	The number of distinct payout wallet addresses ever seen; below, the number of miners.
Uptime	How long the pool has been running.
Pool Fee	Your configured operator fee, as a percentage.

Under the tiles, inside the same card, is the **Pool Hashrate (24h)** chart. The line is your pool's hashrate over the last day, smoothed over 15 minutes so that single lucky or unlucky minutes don't make it jump. Amber dots are the hardest share in each time slot, drawn on their own right-hand axis ("Best Share") — a tall dot came unusually close to a block. Orange dots mark a block. Hover (or touch) the chart for the exact values at that moment; "Full view →" opens the Hashrate tab. On a narrow screen the big number, the tiles and the chart stack on top of each other.

The "Network" card — context from the Bitcoin network (8 tiles)

Tile	Meaning
Network Hashrate	The whole network's speed (EH/s). Your share of this is, roughly, your share of the luck.
Difficulty	The current network difficulty.
Last Diff Change	How much difficulty moved at the last adjustment (green if it fell, red if it rose), with the block it happened at.
Diff Forecast	The predicted next adjustment, same colour logic, with the block it is due at.
Next Diff	Estimated time to the next adjustment, plus blocks remaining.
Block Height	The current chain tip height.
BTC Price	Price in $ and €, with the time of the last update.
Chain	Which chain, plus your Bitcoin Core version. A warning line reads "IBD" (still syncing, mining waits) or "no rpc" (node unreachable).

Below the tiles, the card always shows the "block" line, plus the "spool" and "miners" lines while they apply; each starts with a small badge:

"block" — whether Bitcoin Core has checked how the pool builds a block (since v1.44). Right after the start, then about once an hour (and, after a rejection, on every new block in the network), the pool builds a test block from the current job and asks Core to check everything except the proof of work. Green reads "Block assembly checked by Core: OK" with how long ago and the block height; grey "Block assembly not yet checked by Core" right after a start; a yellow "Block assembly rejected by Core" with the reason means a

block found now could be refused — look at Admin → Health. The check is on by default; with `[server] block_proposal_check = false` in `config.toml` the line reads "Block assembly check by Core is off".

"spool" — only while a found block is waiting for Core's verdict. It says how many blocks are in the block spool, at which height and after how many attempts; the pool keeps resubmitting on its own (see "The Recent blocks card" below and chapter 15).

"miners" — only while the node is unhealthy, for example while Core restarts. The pool has disconnected the miners and refuses new connections until Core delivers block templates again; meanwhile the miners mine on their fallback pool (chapter 15, "All miners disconnected").

The "Energy" card

Present if energy tracking is on (or for you as admin). It is laid out like the Pool card. On the left, in large type, is **Power**: what your miners draw right now, in watts (kW from 1 kW up). Below it: the cost per hour at the current tariff, which tariff that is (for example "default", a time-of-use period, or solar surplus) with its price per kWh, and how many of your devices are reporting power. On the right are four tiles: **last 24h** and **last 7 days** (kWh, with the cost below), **Lifetime** kWh and **Lifetime cost** (since the pool started, or since the date you last reset the counters).

The **kWh source** section shows where the energy came from, as two bars with the same colours: solar (green), battery (blue) and grid (grey). **Right now** is the current mix (only while the solar reading is fresh); **since …** is the total since the counters started, with the kWh and percentage of each part. Battery means solar power stored earlier in the day and used by the miners later — it counts as self-supplied, not as grid power. The battery part only appears once a battery kilowatt-hour has actually been counted.

With a solar feed configured, a **Solar PV** section follows: **PV now** (what the panels produce), **House load** (what the house uses, if your meter reports it), **Excess** (green and "more produced than used" when there is surplus, red and "more used than produced" when not) and, if you have one, **Battery** with its direction (charging / discharging / idle) and state of charge. The sun icon turns green and an "excess active" badge appears while the miners run on surplus; "snapshot stale" means the solar reading is older than five minutes.

> **Where do the watts come from?** Power and kWh are read from your miners' own telemetry (the Devices tab, chapter 7). Without registered, connected devices these tiles stay empty, and devices that are "disconnected" (not mining to this pool) are not counted.

The "Active workers" card

Up to ten miners, with the columns **User** (shortened; hover for the full name), **Hashrate**, **Diff** (the share difficulty the pool currently asks this miner for), **Shares** (shares per minute) and **Last seen**. Miners sending shares right now come first with a green dot; quiet ones are dimmed with a grey dot. "All workers →" opens the full list — the **Miners** tab. When empty it shows "No workers connected yet." and your Stratum URL. On a phone only User and Hashrate are shown.

The "Best Shares" card

A small high-score table with a toggle between **All Time** (global best) and **Per Worker** (each worker's best). Columns: Rank (🥇 🥈 🥉 or #N), Worker, Difficulty (amber), When and Hash. It shows the top ten; "Show all" expands the list. On a phone When and Hash are hidden. Again — this is a leaderboard of your luckiest shares, not money.

The "Recent blocks" card

Up to five rows: time, worker, a status badge (green "accepted", red "rejected", yellow "pending") and a shortened hash (a clickable explorer link for accepted blocks, if an explorer is configured). "All blocks →" opens the Blocks tab. Empty, it reads "No blocks found yet." with a gentle reminder: "Solo mining is a marathon — hashrate × luck × patience."

Since v1.45 a yellow "pending" row can also say **"being resubmitted"**: the block was found, but Bitcoin Core could not give a final verdict (it was restarting, unreachable or undecided). The pool keeps the full block on disk in `block-spool/` inside the data directory and resubmits it to every node until one accepts it, one rejects it for real, or the chain has moved on (then "stale"). The dashboard's Network card shows a "spool" row meanwhile, and a health warning names the block.

The "Miner software" card

Which firmware and versions mine on this pool: one row per software family and version (from what the miners announce when they connect) with the number of active workers, their summed hashrate and the best share among them. No worker names, no addresses — the card is public on every pool. A **Board** column appears as soon as one of the miners also names its board (WarpAxe does, for example `warpaxe/0.1.41 (nerdoctaxe-gamma)`): it lists the boards that run that software version. On a phone the boards stand under the software name.

> **Connect a miner right away** with the **"⛏ How to connect your miner"** button at the top of the dashboard — it shows your exact address, ports and (if enabled) TLS/Sv2 details. The next chapter walks through it.

6 · Connecting your first miner

Point your miner at your pool host. You configure three things in your miner's own settings page.

Setting	Value
Stratum URL / host	Your pool host's address on the network, e.g. `stratum+tcp://192.168.1.50` (or its hostname)
Port	`3333` — standard Stratum V1 (works with every miner firmware)
Worker / user	Your Bitcoin address, optionally with a worker name: `bc1q…` or `bc1q….myBitaxe`
Password	Anything (commonly `x`) — it is not used.

Which port?

Pick by **how your miner reaches the pool**, not by performance: all three carry the same work at the same speed, and the choice never changes your odds of finding a block. Encryption protects the *connection*, not your hashrate.

Port	What you get	What it costs
`3333` **Stratum V1 (plain)**	Works with every miner firmware; nothing to set up.	Unencrypted — perfectly fine on your own LAN, not for traffic crossing a network you don't control.
`3334` **Stratum V1 + TLS**	Encrypted transport for the exact same V1 protocol.	Only firmwares that accept a custom/self-signed certificate can use it (chapter 11); no speed benefit.
`34254` **Stratum V2 (NOISE)**	Modern protocol, always encrypted (NOISE), no certificate to manage.	Fewer firmwares speak Sv2 yet; needs the pool's authority key (chapter 11).

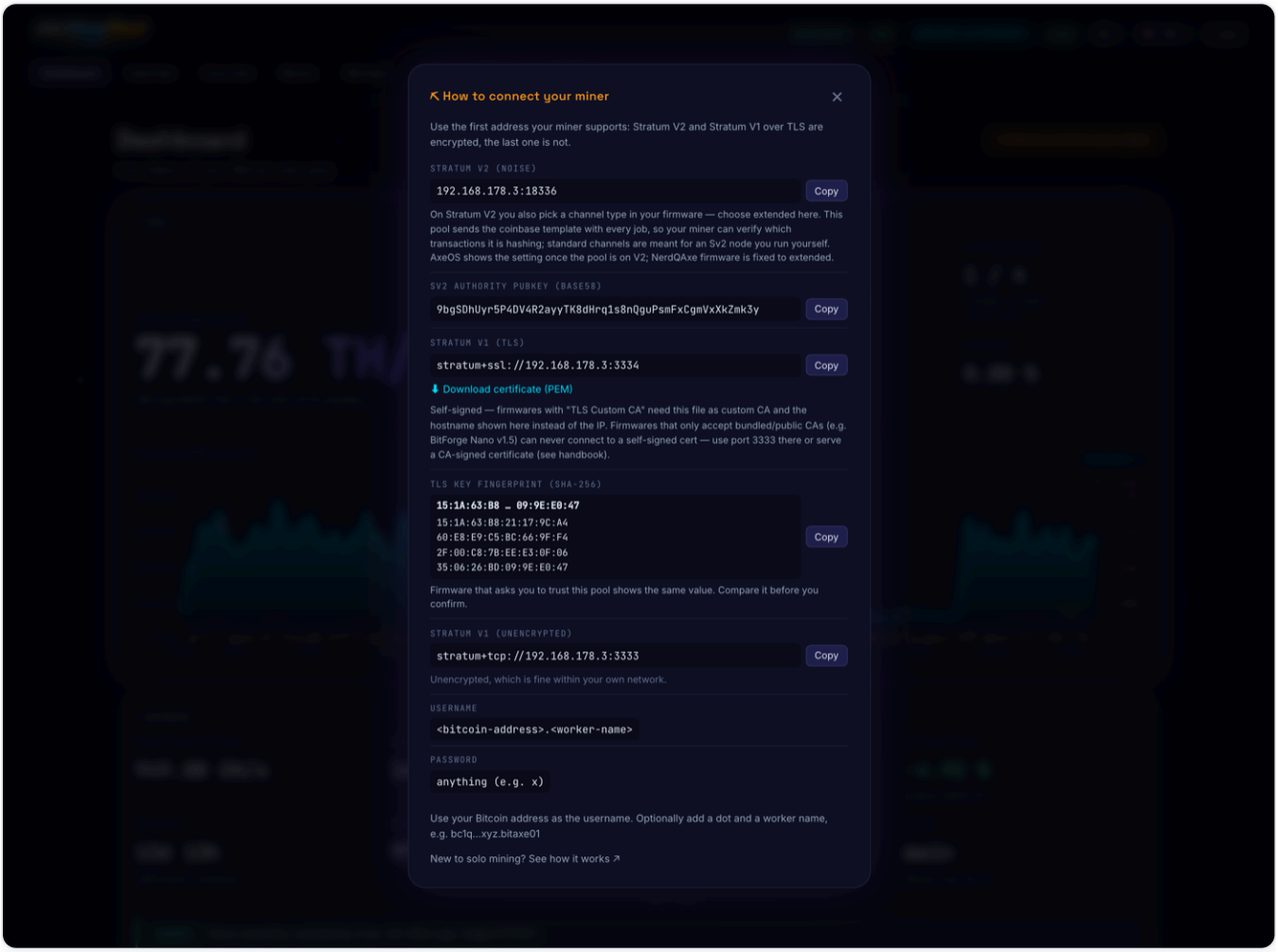
Short answer: on a home LAN use plain `3333`. Reach for TLS (`3334`) only when mining traffic crosses a network you don't control, and Stratum V2 (`34254`) only if your firmware supports it. None of the three is faster than the others.

One port for all three (optional). If you would rather give your miners a single port number, set `single_port = true` in the `[stratum]` section of `config.toml` and restart the pool. Port `3333` then also accepts TLS and Stratum V2, provided each of them is enabled: the pool tells the protocols apart by the first bytes the miner sends. Keep the protocol prefix (`stratum+ssl://` for TLS); only the port number changes. The "How to connect your miner" panel then shows `3333` on every line. The separate ports `3334` and `34254` keep working, so miners already set up on them need no change. The switch is off by default.

The "How to connect your miner" panel

Rather than typing these by hand, open the **"⇱ How to connect your miner"** button on the dashboard. It shows each value with a copy button (which confirms with a "✓" for a moment). The encrypted ways come first; use the first one your miner supports:

- **Stratum V2 (NOISE)** — `<host>:34254` (shown only if Sv2 is enabled) plus the Sv2 authority public key in Base58, if set, and a hint to choose the *extended* channel type in your firmware.
- **Stratum V1 (TLS)** — `stratum+ssl://…` (shown only if TLS is enabled). With the pool's own self-signed certificate (the default) a **"⬇ Download certificate (PEM)"** button and a **TLS key fingerprint (SHA-256)** line follows: a string of hex pairs such as `AB:CD:…` that identifies the pool's key. Firmware that asks you to trust the pool shows the same value — compare the two before you confirm. A certificate from a public authority (e.g. Let's Encrypt) needs no such check, so the line is not shown then. See chapter 11 for which firmware can use TLS.
- **Stratum V1 (unencrypted)** — `stratum+tcp://<host>:3333`, the address every firmware understands, listed last. The note under it depends on how you opened the dashboard: on your own network (e.g. `umbrel.local` or `192.168.…`) it says that is fine; through a public name it warns that the connection can be rerouted to someone else's server on its way over the internet, and your miner then hashes for them. Braiins reported such attacks on plain Stratum V1 in November 2026.
- **Username** — `<bitcoin-address>.<worker-name>`. **Password** — anything (e.g. `x`).



The “How to connect your miner” panel — your exact address and ports, plus the TLS certificate and Stratum V2 key when enabled.

Worker names. Add a name after your address (`bc1q….livingroom`) to tell several miners apart on the Workers and Miners tabs. All of them still pay out to the same address.

Running a public 0% pool? By default every miner pays out to the one operator address you set in the wizard. If you instead switch the pool to **per-worker payout** (`[mining] payout_mode = "per_worker"`), the Bitcoin address in *each* miner's login becomes that miner's own payout address — different miners can use different addresses, and each one keeps the full reward for the blocks it finds, non-custodially. That is how you run dvb-WarpPool as an open, zero-fee solo pool for other people. See the "Run a public pool" guide at **docs.warppool.org** for the operator setup and hardening checklist.

Save the miner's settings and give it a minute. It appears on the dashboard's **Active miners** count and on the **Miners** tab, and its shares start flowing into the hashrate chart.

Small miners look "bursty". A tiny device (e.g. a NerdMiner at a few hundred KH/s) submits a share only every few minutes, so its displayed hashrate naturally rises and falls. That is normal and does not mean it is offline. For NerdMiner-class miners (for example CPU miners such as the WarpAxe dev kit) VarDiff therefore at most doubles the difficulty per step, so a few lucky shares in a row no longer make it jump. This applies to V1 and Stratum V2.

7 · The tabs, one by one

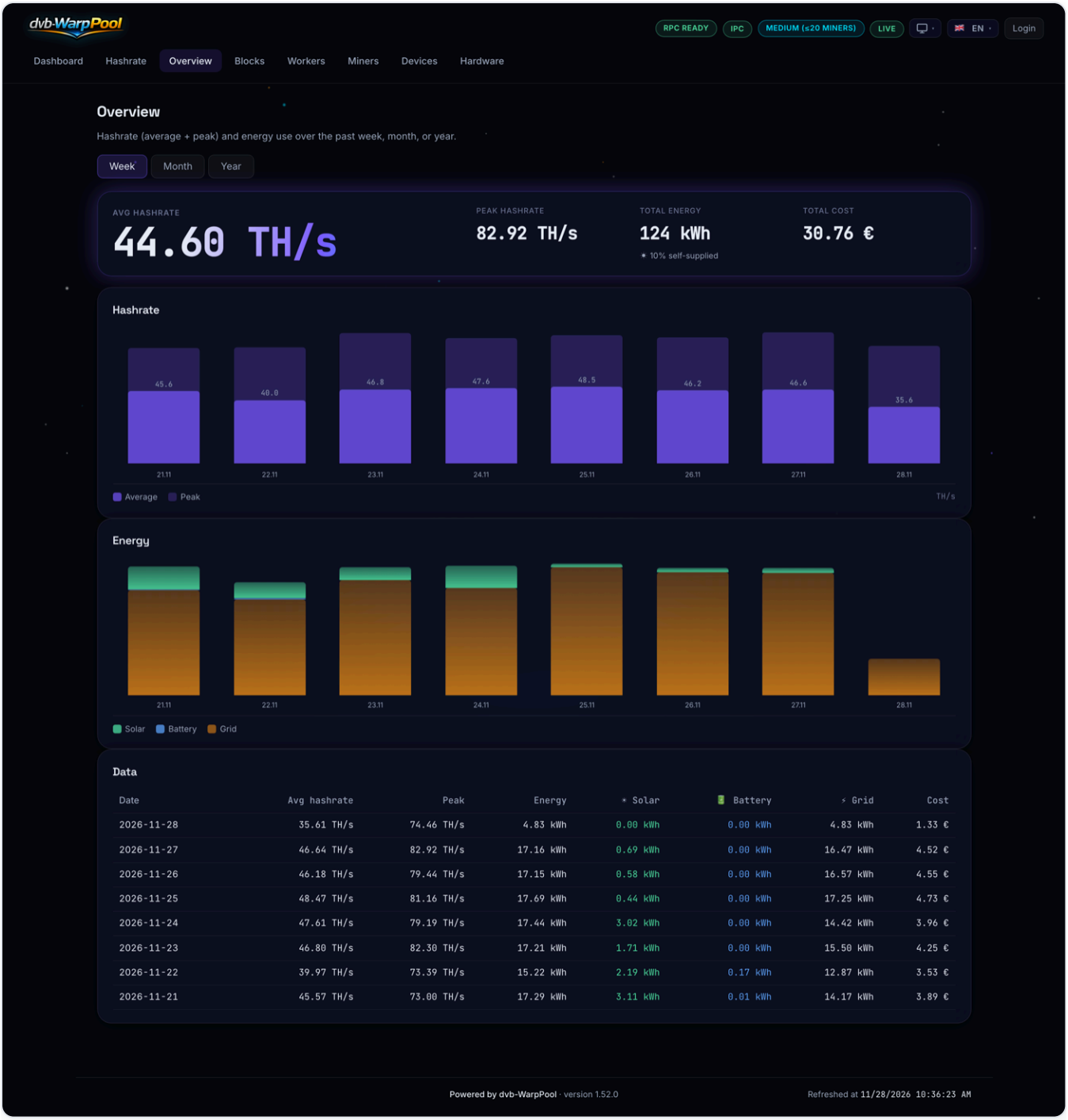
The navigation bar gives you focused views. First, the single most confusing thing about this interface — please read this before the tabs:

> **Three menu items with confusable names.** The menu label is *not* always the word you would expect:
>
> - Menu **Workers** → a table with one row per **wallet address**.
> - Menu **Miners** → a read-only table with one row per **Stratum login** (`address.worker`).
> - Menu **Devices** → the interactive **device manager** with telemetry from the miners themselves.
>
> The dashboard's "All workers →" link opens the **Miners** tab, and a wallet page's "All wallets" link opens the **Workers** tab. Always refer to a page by its **menu label**.

Overview (menu "Overview")

A weekly, monthly or yearly summary; a **Week / Month / Year** switch at the top changes the range. The top card leads with **Avg hashrate** over the period in large type, with tiles for **Peak hashrate**, **Total energy** (with a "☀ NN% self-supplied" note covering solar and battery together) and **Total cost**. The energy parts appear only if energy is visible; the cost counts the grid share only, since self-supplied power is free.

The **Hashrate** chart has one pair of bars per day (per month in the Year view): a pale "Peak" bar with a strong "Average" bar in front of it. In the Week and Year views the average is printed above each bar; the unit is shown once, next to the legend. Hover a bar for its exact average and peak. The **Energy** chart stacks grid (orange), battery (blue) and solar (green) per bar. The **Data** table lists each period, newest first: Date, Avg hashrate, Peak, Energy, Solar, Battery, Grid and Cost (the Battery column appears only for systems with storage; on a phone, swipe the table sideways). Empty, it reads "No data yet — daemon needs at least 1 hour of runtime to build daily aggregates."



Overview: the period's average hashrate up top, average and peak per day, and the energy used.

Hashrate (menu "Hashrate")

The detailed hashrate view, built from the pool's stored time buckets. Two controls filter it: **Time window** (1h / 6h / 24h / 7d, default 24h) and **Worker** (first option "Pool total", then every miner). One card holds everything: the current hashrate in large type (the last complete bucket, as on the dashboard), tiles for the **Maximum in window**, the **Average** and **Shares / Blocks** in the window, and the **History** chart with the amber best-share dots.

The chart has a **Smoothed / Raw** switch. **Smoothed** (the default) averages over a few minutes — 3 minutes in the 1-hour window, up to an hour in the 7-day window — so you see the trend. **Raw** shows every stored bucket, which looks jumpy: a small miner finds a share only every few seconds, so single minutes

swing a lot. The legend underneath reads "<n> buckets · <m>min resolution", plus the worker filter if one is set.



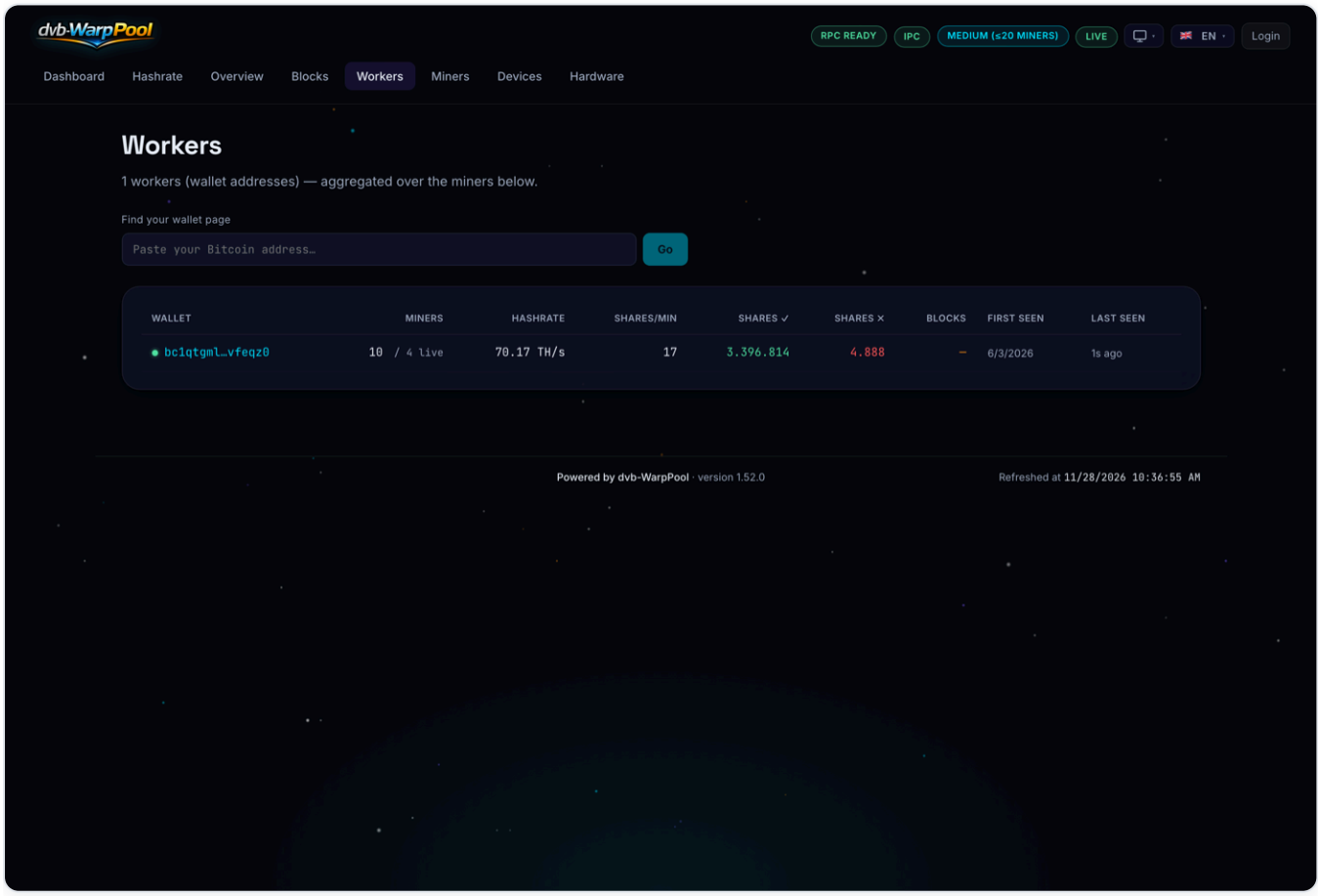
Hashrate: filter by worker and time window, switch between smoothed and raw; the amber dots are best-share peaks.

Workers (menu "Workers") — one row per wallet

This page adds up by **payout wallet address**: all the miners paying to the same address are summed into one row, and wallets with a live miner come first. At the top, **Find your wallet page** takes a Bitcoin address and opens its public page (chapter 8) — this works even if the pool keeps its wallet list private.

Column	What it means & what's normal
Wallet	The payout address, shortened (hover for the full value). Click it to open the wallet page.
Miners	How many miners pay to this wallet, and how many are live right now. A green dot means all of them are active.
Hashrate	The combined speed of this wallet's miners.
Shares/min	How fast shares are coming in for this wallet.
Shares ✓ (green)	Accepted shares — valid work. This number should keep climbing.
Shares ✗ (red)	Rejected shares. A handful right after a reconnect is normal. A steadily growing reject count is worth a look.
Blocks (orange)	Blocks this wallet has found. Usually 0 for a long time — that's solo mining.
First seen / Last seen	When this wallet first appeared and when it last submitted. "Last seen" jumping to hours ago means its miners went quiet.

What to watch: a healthy wallet has a rising Shares ✓, a near-zero Shares ✗ and a recent "Last seen". On a phone only Wallet, Miners and Hashrate are shown. Empty, it reads "No worker connected yet." with your Stratum URL.



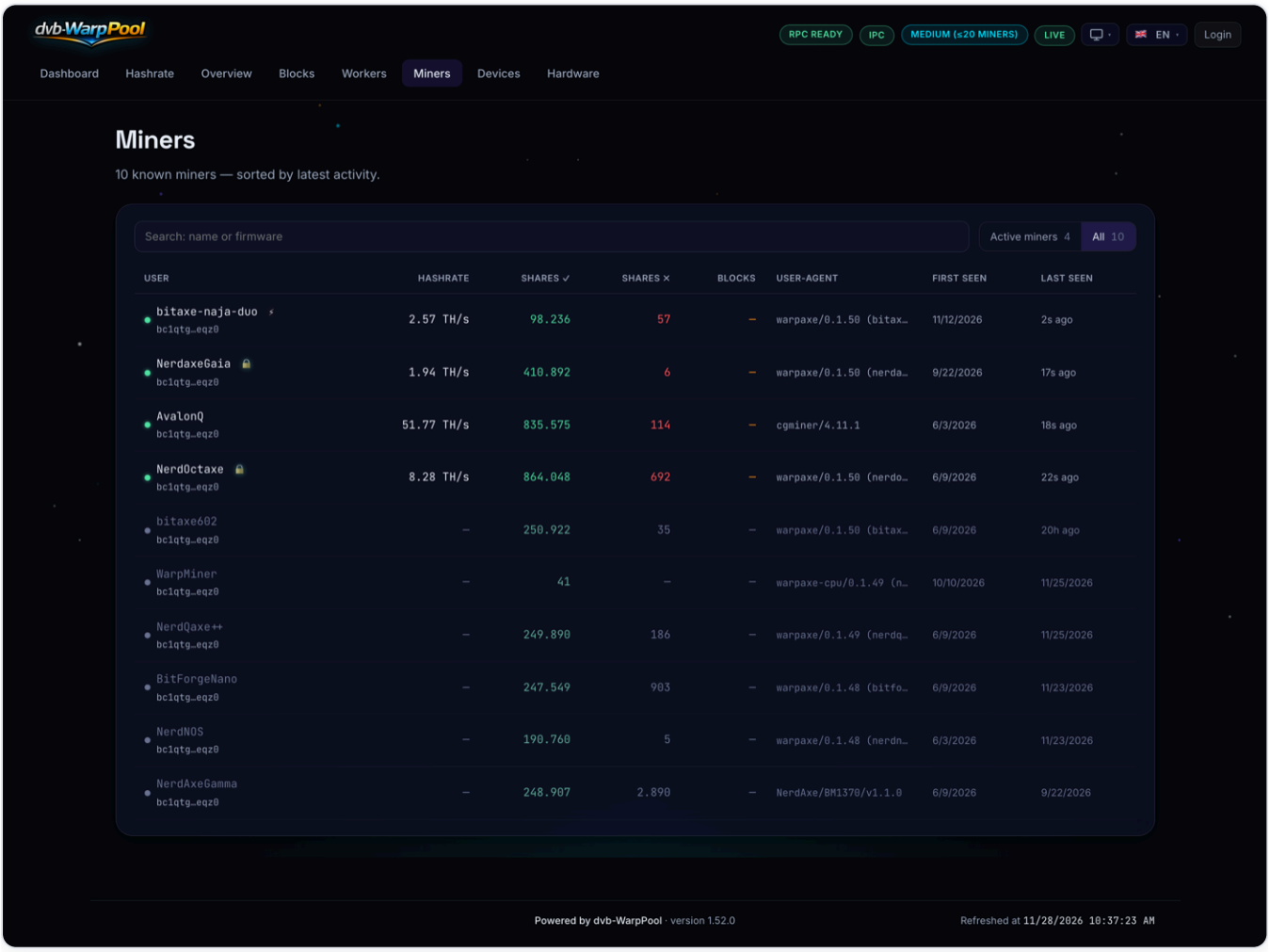
Workers: one row per payout wallet, live wallets first, with accepted/rejected shares and blocks.

Miners (menu "Miners") — one row per Stratum login (read-only)

Each row is a single Stratum login (`address.worker`). Miners sending shares right now come first with a green dot; quiet ones are dimmed with a grey dot. Above the table are a **search box** (matches the worker name or the firmware string) and a switch between **Active miners** and **All**, each with its count. The first 50 rows are shown; "Show all" lists the rest.

Column	What it means
User	The login name, with a 🔒 icon for TLS or a ⚡ icon for Stratum V2 (NOISE).
Hashrate	This miner's current speed, or "—" while it is quiet.
Shares ✓ / ✗	Accepted and rejected shares for this login.
Blocks	Blocks found by this login.
User-Agent	The miner's reported firmware — handy for telling identical devices apart.
First seen / Last seen	When this login first and last submitted.

On a phone the table narrows to User, Hashrate and accepted shares; on the smallest screens to User and Hashrate.



Miners: every Stratum login with search and an active/all switch; a lock icon marks TLS, a lightning icon Stratum V2.

Devices (menu "Devices") — the interactive device manager

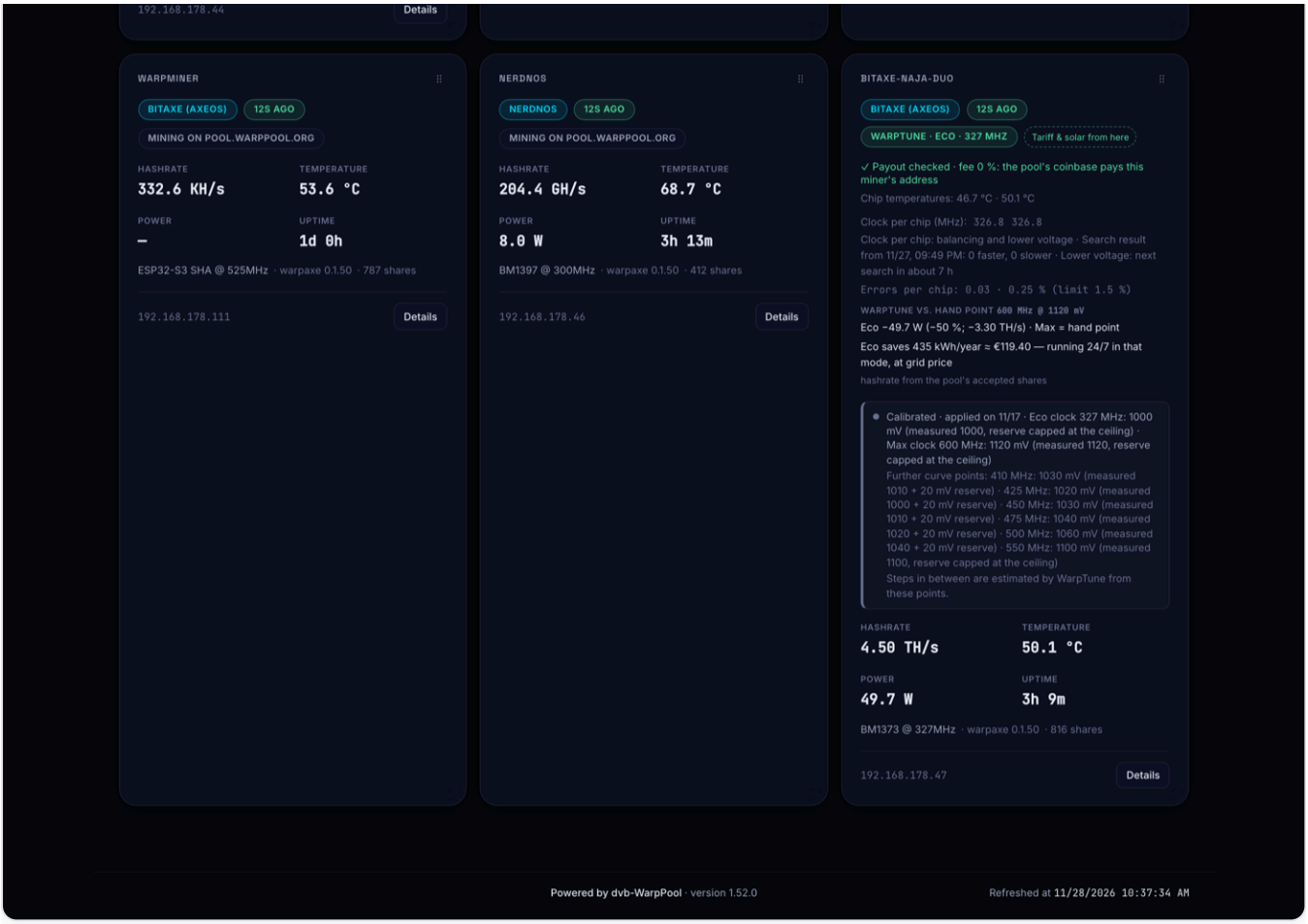
The most interactive tab: it lists and manages the physical miners on your network, with live telemetry read from the miners themselves, polling every 15 seconds. Supported hardware: AxeOS devices (Bitaxe, BitForge Nano, NerdAxe Gamma, NerdAxe Gaia, NerdQaxe, NerdOctaxe), NerdNOS and Avalon Q. NerdMiner V2 has no REST API, so it can mine but not be managed here. Whether visitors see this tab at all is set in Admin → Profile ("Devices tab visible to all visitors"); adding and removing devices always needs a login.

- **Auto-discovered (mDNS)** — devices that announce themselves on your LAN, each with an "Adopt" button when logged in ("already added" if it is known).
- **Add miner** (logged-in only) — a **Host (IP or hostname)** field, a **Vendor** dropdown (BitAxe/AxeOS, BitForge Nano, NerdMiner, NerdAxe Gamma, NerdAxe Gaia, NerdQaxe, NerdOctaxe, NerdNOS, Avalon Q, BitMain/Antminer, Whatsminer), an optional **Label**, and **Add**. If you pick the wrong member of the AxeOS family, the pool corrects the label from what the firmware itself reports.
- **Auto Scan** ("🔍 Auto Scan") sweeps your network range for miners. Tick several results and add them at once ("Select all", "Add selection"), or use ↪ to copy one into the form.
- **Device cards** — one per miner, three to a row on a wide screen. Re-order them with the ⠿ **handle**, just like the dashboard cards.

Each device card shows, from top to bottom:

Element	What it means
Vendor badge	The kind of device.
Age badge	How fresh the telemetry is: green under 90 s, yellow up to 10 min, red beyond ("never probed" if the pool has not reached it yet).
Mining on <host> (grey)	The miner is set to *another* pool. You still see its temperature and power here, but its consumption is not counted in this pool's kWh. Easy to miss after a firmware update or when the miner fell back to its backup pool.
Disconnected (yellow)	The miner is set to this pool but has no active Stratum connection right now.
WarpTune badge	Only with the optional dvb-WarpTune sidecar — see below.
Telemetry tiles	**Hashrate**, **Temperature** (turns **red above 75 °C**), **Power** and **Uptime**, with model, firmware and the device's own share count below.
Details / Remove	"Details" opens the device page with alerts and 1h / 6h / 24h / 7d graphs of hashrate, power, temperature, voltage and fan. "Remove" (logged-in only) asks "Remove miner <name>?" first.


dvb-WarpPool
RPC READY
IPC
MEDIUM (≤20 MINERS)
LIVE
EN
Login
Dashboard
Hashrate
Overview
Blocks
Workers
Miners
Devices
Hardware
Devices
Live telemetry for connected miners. AxeOS (BitAxe / BitForge Nano / NerdAxe Gamma / NerdAxe Gaia / NerdQaxe / NerdOctaxe), NerdNOS and Avalon Q are probed directly; NerdMiner V2 exposes no REST API.
Login required to add or remove miners.
WARPTUNE VS. HAND POINTS
ECO SAVES
-117.1 W
−25 % vs. the hand points of 5 miners
MAX ADDS
-4.5 W
less power at the same hashrate (2 miners at their hand clock)
MINERS
6 / 6
6 with figures · 0 with too little data
What WarpTune's Eco setting saves and its Max setting adds, each miner against the point it would run without WarpTune (its hand point). Measured in the pool's accepted shares and the miners' own power readings; ± is the share noise, ≈ a figure scaled from a neighbouring voltage. Details per miner in the card's tooltip. Without 192.168.178.43 (work modes): its figures are on its own card.
192.168.178.43
AVALON Q (CANAAN)
12S AGO
WARPTUNE · ECO · 290 MHZ
Tariff & solar from here
Next off-window "Nachts aus": 08:00 PM – tomorrow 07:00 AM
Supply 844 W · 12.1 V bus · hash board 800 W at 23.0 V / 34 A · 95 % efficiency
Last 7 days: 77 h standby (~3.6 kWh instead of ~65 kWh in Eco)
CHIPS 160 ok 0 weak 0 dead
Status still being determined: 111 of 180 min collected
Since miner start: weakest chip 87 (string 3) at 86 % of the mean (for orientation only, not a status)
MAINTENANCE
Filter: 39 % · cleaning due in about 51 days, around Jan 18, 2027
Not calibrated
HASHRATE
54.35 TH/s
TEMPERATURE
65.0 °C
POWER
844.0 W
UPTIME
6d 19h
Avalon Q · Eco @ 289 MHz · 22.066 shares
192.168.178.43
Details
NERDOCTAXE
NERDOCTAXE
12S AGO
WARPTUNE · ECO · 625 MHZ
Tariff & solar from here
✓ Payout checked · fee 0 %: the pool's coinbase pays this miner's address
Clock per chip (MHz):
625 625 625 625 625 625 625 625
Search result from 11/27, 09:51 PM: 0 faster, 0 slower
Errors per chip: 0.52 · 0.00 · 0.13 · 0.00 · 0.10 · 0.01 · 0.01 · 0.01 % (limit 1.5 %)
WARPTUNE VS. HAND POINT 700 MHz @ 1210 mV
Eco −29.2 W (−14 %; −438.57 TH/s) · Max −3.3 W (−2 %) at the hand clock
Hand point measured on Nov 10 · Max measured on Nov 11
Eco saves 256 kWh/year ≈ €70.23 · Max saves 29 kWh/year ≈ €7.91 — running 24/7 in that mode, at grid price
hashrate from the pool's accepted shares
hand point 700 MHz @ 1210 mV draws about 213.6 W, over the 192 W power supply reserve: WarpTune restores the highest step under the limit instead
Calibrated · applied on 11/11 · Eco clock 625 MHz: 1170 mV (measured 1150 + 20 mV reserve) · Max clock 700 MHz: 1200 mV (measured 1190 + 10 mV reserve)
Further curve points: 600 MHz: 1160 mV (measured 1140 + 20 mV reserve) · 650 MHz: 1190 mV (measured 1170 + 20 mV reserve) · 675 MHz: 1210 mV (measured 1210, reserve capped at the ceiling)
HASHRATE
10.29 TH/s
TEMPERATURE
66.1 °C
POWER
181.5 W
UPTIME
3h 18m
BM1370 @ 625MHz · warpaxe 0.1.50 · 891 shares
192.168.178.45
Details
NERDQAXE++
NERDQAXE
12S AGO
MINING ON POOL.WARPPOOL.ORG
WARPTUNE · ECO · 590 MHZ
Tariff & solar from here
✓ Payout checked · fee 0 %: the pool's coinbase pays this miner's address
Clock per chip (MHz):
640.6 (+50) 590 615.6 (+25) 618.8 (+30)
Search result from 11/28, 10:15 AM: 3 faster, 0 slower
Errors per chip: 0.18 · 0.07 · 0.17 · 1.02 % (limit 1.5 %)
WARPTUNE VS. HAND POINT 800 MHz @ 1250 mV
Eco −31.3 W (−28 %; +0.62 TH/s) · Max ≈ hand point
Eco saves 274 kWh/year ≈ €75.25 — running 24/7 in that mode, at grid price
hashrate from the pool's accepted shares
Point monitored · 1150 mV · confirmed, keeps watching (401 shares)
calibrated since 11/09
HASHRATE
4.94 TH/s
TEMPERATURE
58.0 °C
POWER
77.8 W
UPTIME
2h 16m
BM1370 @ 590MHz · warpaxe 0.1.50 · 595 shares
192.168.178.41
Details
BITFORGENANO
BITFORGE NANO
11S AGO
MINING ON POOL.WARPPOOL.ORG
WARPTUNE · ECO · 525 MHZ
Tariff & solar from here
✓ Payout checked · fee 0 %: the pool's coinbase pays this miner's address
Clock per chip (MHz): 525 525
The search starts once the operating point has stayed unchanged for 30 minutes (1 min to go)
Errors per chip: 0.12 · 0.91 % (limit 1.5 %)
WARPTUNE VS. HAND POINT 625 MHz @ 1050 mV
Eco: not enough data yet (49 shares, 10 min) · Max −1.2 W (−3 %) at the hand clock
Hand point measured on Nov 16
Max saves 11 kWh/year ≈ €2.95 — running 24/7 in that mode, at grid price
hashrate from the pool's accepted shares
Calibrated · applied on 11/28 · Max clock 625 MHz: 1030 mV (measured 1020 + 10 mV reserve)
Further curve points: 425 MHz: 1030 mV (measured 1030, reserve capped at the ceiling)
Steps in between are estimated by WarpTune from these points.
HASHRATE
2.10 TH/s
TEMPERATURE
51.9 °C
POWER
36.2 W
UPTIME
3h 5m
BM1370 @ 525MHz · warpaxe 0.1.50 · 772 shares
BITAXE602 GAMMA
BITAXE (AXEOS)
12S AGO
MINING ON POOL.WARPPOOL.ORG
WARPTUNE · ECO · 525 MHZ
Tariff & solar from here
✓ Payout checked · fee 0 %: the pool's coinbase pays this miner's address
WARPTUNE VS. HAND POINT 640 MHz @ 1140 mV
Eco −3.8 W (−16 %; +0.03 TH/s) · Max: not enough data yet (0 shares, 0 min)
Hand point measured on Nov 20
Eco saves 34 kWh/year ≈ €9.20 — running 24/7 in that mode, at grid price
hashrate from the pool's accepted shares
Point monitored · 1100 mV · confirmed, keeps watching (403 shares)
calibrated since 11/15
HASHRATE
1.12 TH/s
TEMPERATURE
65.0 °C
POWER
19.7 W
UPTIME
3h 29m
BM1370 @ 525MHz · warpaxe 0.1.50 · 1.635 shares
192.168.178.42
Details
NERDAXE GAIA
NERDAXE GAIA
12S AGO
WARPTUNE · ECO · 300 MHZ
Tariff & solar from here
✓ Payout checked · fee 0 %: the pool's coinbase pays this miner's address
WARPTUNE VS. HAND POINT 380 MHz @ 960 mV
Eco −3.0 W (−11 %; −0.40 TH/s) · Max ≈ hand point
Eco saves 27 kWh/year ≈ €7.33 — running 24/7 in that mode, at grid price
hashrate from the pool's accepted shares
Voltage check · 950 mV · 3/200 shares
calibrated since 11/12
HASHRATE
1.82 TH/s
TEMPERATURE
55.0 °C
POWER
23.2 W
UPTIME
3h 22m
BM1373 @ 300MHz · warpaxe 0.1.50 · 823 shares
192.168.178.40
Details



Devices: adopt discovered miners or add them by IP, then watch live temperature, power and hashrate.

The WarpTune badge (optional)

dvb-WarpTune is an optional auto-clock for AxeOS miners (Bitaxe, NerdAxe, NerdQaxe, NerdOctaxe, BitForge Nano) and the Avalon Q. It is a small sidecar program that runs on a Mac or Linux box on your LAN, not inside this app, and holds each miner at a temperature target by stepping frequency and core voltage along the board's own list of steps (its ladder), with guardrails the firmware does not have. It never raises a miner's hand-tuned point itself, and at the hand clock and below it never goes above the voltage the miner already runs at; above the hand clock it uses the maker's steps at the maker's voltage. It reads two things from this pool: the reject reasons per worker and the electricity situation (tariff and solar surplus), so that in energy mode it can switch miners between Eco, Balanced and Max.

When the sidecar is coupled (`[mining.tune]` in the pool's `config.toml`, pointing at the sidecar's snapshot address), each device card shows a **WarpTune** badge with the mode, the current frequency and a state: **dry run** (it only proposes, writes nothing), a green badge when it controls the miner live, **control off** after a safety trip, **stale** when the pool's copy of the snapshot is older than two minutes. **waiting for PV surplus** means the miner runs Max on solar surplus but the surplus does not yet cover its next step; the tooltip names the budget in watts. Hover the badge for the last decision and its reason. A small green **Tariff & solar from here** label means WarpTune takes its electricity price and solar surplus for this miner from this pool.

What WarpTune brings shows in the tile **WarpTune vs. hand points** above the cards and in one line on every WarpTune card: **Eco saves** is the power the Eco point draws less than the hand point (–W), **Max adds** the hashrate the Max point delivers more (+TH/s); the tile also counts the miners with figures and those with too little data yet. The reference is the miner's **hand point**, the point it would run without

WarpTune (and the one WarpTune restores on every stop). It is the honest "without WarpTune": if you never tuned the miner by hand, it is the factory setting and the card adds **(= factory setting)**; it is measured, not estimated, because the miner really ran there; and your own hand tuning is not credited to WarpTune. Every 30 minutes the sidecar takes, per point, the miner's own power readings and the hashrate from the pool's accepted shares of the last seven days. A point counts from 200 shares and 30 minutes; below that the line says how many are there so far. If the seven days hold too little for a point, the card shows that point's last valid measurement instead and names its date ("Hand point measured on …"). **±** is the share noise. **≈** marks a point the miner no longer visits, estimated from the best-measured point at the same clock (same hashrate, power scaled by V²). The Avalon Q is named by its work mode and left out of the tile altogether — not in the sums, the percentages or the miner count — since its kilowatt and its Super mode would make the tile all about it; a line on the tile names it: **Without *name* (work modes): its figures are on its own card.** When every Max point runs at its hand clock, Max adds no hashrate by construction; the tile then shows the watts Max saves instead, with **less power at the same hashrate (*n* miners at their hand clock)**. Hover a card's line for the basis of each point and the method. If an update fails, the error is shown, the last figures stay and the sidecar tries again after 5 minutes. These are watts and hashrate only, no kWh or money.

Under the badges sits WarpTune's **calibration** (German "Einmessen"): the search for the lowest core voltage each of the miner's steps still hashes cleanly at. Logged in, you start it with one button per device, **Start calibration**. WarpTune then measures the miner's Eco step and its Max step (the hand-tuned point) one after the other: first the reference voltage on 200 pool shares (a reference that falls short walks up in 10 mV steps to the first stable voltage; the hand point itself is never raised), then 10 mV less at a time until a step falls short; the voltage found gets one more full share verdict before it counts. The start dialog shows how long that takes ("Expected duration: about … to …"), usually several hours; the miner keeps mining, its energy mode pauses meanwhile, and every guardrail stays on (heat, current, dead chips end the stage and put the hand-tuned voltage back). While it runs, the line shows the stage, the voltage under test, the shares counted, the time left and a progress bar, with **Pause** and **Stop**. Stopping early keeps the result of the steps already finished: the line offers **Apply** or **Discard** for them, and a new calibration can start once you have decided. When it is done, the line lists per step the voltage found against the reference, the measured change in power and the pool-side hashrate, and asks you to **Apply** or **Discard**. A step's result is the lowest voltage that hashed cleanly above the highest one that fell short; **Apply** adds a reserve of 20 mV on top (never above the reference) and, while the miner runs, raises a calibrated step by 10 mV should the pool's shares fall clearly short there later or a second sign agrees (chip errors, a dropped-out domain, rejects, the firmware's hashrate) — at most twice a day, and back to the calibrated voltage after six hours without a shortfall. Nothing changes until you apply: the found voltages then become the miner's operating point (the hand-tuned point stays the ceiling and the restore point), also after a restart of the sidecar. A restart in the middle of a calibration continues where it was, with the shares already counted.

Calibration only ever **lowers** the core voltage below your hand-tuned point at the same frequency, so the miner never draws more power than at that point. Each voltage is judged on one window of 200 pool shares, and that count still varies by several percent: a voltage that is in fact fine can occasionally fall short. Calibration then keeps more voltage, never less, so the result errs on the safe side. A board with a single weak chip settles where that chip still hashes.

After **Apply** the card keeps a line **Calibrated · applied on …** with the date and the points in effect ("650 MHz: 1120 mV"), also long after the job itself has left the card, and the button then reads **Calibrate again**.

The yield rule. The pool only books what the chips get right: a lower voltage saves power, but its chip errors cost real hashrate. Where the firmware reports chip errors, calibration therefore picks, among the good

voltages above the highest bad one, the one with the most hashrate per watt, not simply the lowest stable one; the lowest good one wins only when nothing above it is at least 0.5 % better. An example: a Bitaxe Gamma at 640 MHz was stable at 1030 mV, but with 6.3 % chip errors; 1040 mV with 1.9 % gives more hashrate per watt, so the result is 1040 mV. The card explains such a choice per stage in a line of its own: the chosen voltage, the stable one it beat, how much more hashrate per watt that brings, and both chip error rates. Without error counts from the firmware the old rule applies. The live voltage search does the same sum when `chip_error_trigger` is on: a step judged good whose errors cost more than it saves in power goes back up.

Quick check. A full calibration takes long because every 10 mV step waits for 200 pool shares. On firmware that reports a chip error rate (the one-minute rate or per-chip readings; the hashrate monitor alone is not enough) the card also has a **Quick check now** button. It measures the same stages without a clock search, each starting from the voltage the step runs at now: WarpTune first reads the chip counters at that voltage for about 10 minutes (the baseline), then goes down 10 mV at a time, 10 minutes each, as long as the chip errors stay within one percentage point of the baseline (corrected for temperature), no domain latches off and no chip stands out. Only the candidate — the last step that screened good, 10 mV above the first one that failed — gets the full share verdict; if it falls short, WarpTune goes one step up and tries again, at most up to the reference. A step that gets no error reading at all within twice the screening time (20 minutes) ends the stage as failed (`no_counters`) instead of waiting for ever. The reserve here is 30 mV instead of 20 (never above the reference). Count on about 1.5–2 hours per stage. The result carries the tag **quick check (screened by the chip counters, +30 mV reserve)** and, like every calibration, waits for **Apply** or **Discard**.

Automatic re-check. 28 days after each **Apply**, WarpTune starts one quick check by itself, one step below the applied voltage, but only on a miner whose mode is **Max**: the check holds Max through its screening and share verdict, which a miner in Eco or Balanced would feel without warning. On the other miners you start it yourself when you like with **Quick check now**. It runs once per **Apply** (a service restart does not repeat it), only under live control, only with a chip error rate and not while another job is open. Its result is only a suggestion: the card marks it as an automatic re-check and says what the outcome means (passed: the step below still runs without errors and there is nothing to change; failed: the applied voltage has become tight). Nothing changes without **Apply**.

A stopped or failed job and a chain re-init message stay on the card until you dismiss them with the **×** (**Dismiss**). That only applies in your browser; nothing changes on the pool, and the next new message shows up again. While a calibration runs, or under a stopped or failed one, the card also says since when the applied result is in force: **calibrated since <date>**.

The configured floor is where the voltage search starts, not where it stops: a step still good there goes on down in 10 mV steps to the first voltage that falls short, but never under the chip's hard minimum and never under the clean working range of the board's voltage regulator (WarpAxe reports it as `regulatorMinMv`). The result says how it is bounded: **floor found** (a good voltage directly above one that failed), **chip minimum reached** (good all the way down to the lowest voltage allowed, so it might go lower still), **firmware minimum** (the firmware did not accept the voltage asked for, so the stage ends there) or **ended early** (floor not determined). A step whose reference already sits at the hard minimum is measured once and ends there. A share count that misses the bar by less than its own statistical noise is confirmed on a second window of 400 shares before it counts, so a single unlucky window no longer decides.

Clock search (on by default wherever the power supply rating is known; `calib_clock = false` in the sidecar's configuration switches it off): the calibration measures a clock–voltage curve, each clock at its own lowest clean voltage, every new clock starting at the voltage the last one found. The Max curve climbs in

25 MHz steps above your hand-tuned point and keeps the highest clock that passes the stability rule; without `beyond_spec` it ends at the maker's top step and no step goes above its own table voltage, with `beyond_spec` (Max mode only) it may search beyond the maker's table, its voltage up to the ladder's ceiling. The Eco curve walks down from the highest clock Eco may use and keeps the clock with the best J/TH, which becomes Eco's new upper clock on **Apply**; it stops after two clocks in a row without a better J/TH, or three clocks (75 MHz) below its start. Above the point you validated the chip may run outside the maker's specification and warranty; the start dialog says so. A clock counts as stable only when, over its measuring window, the fan stays at or under 90 %, the chip and the voltage regulator stay under their temperature limits, core current, power and the draw on the power supply stay under their limits with a margin, and the pool's shares call the point healthy. Power, current and supply draw count as the highest mean of three consecutive readings, so a single spike does not fail a clock; temperatures and the fan count their single highest reading. Any failure ends the stage at the last stable clock. The search never goes above the maker's maximum or your configured cap, never raises your hand-tuned point itself, and that point stays the restore point. The card shows the clock under test with the window's readings so far and every clock tried. A miner on fixed maker presets (BitForge Nano) can be calibrated only with the clock search switched on; its presets stay.

Start calibration (or **Calibrate again**) first opens a small dialog. Its checkbox decides, for this one calibration, whether a higher clock is searched; it starts ticked unless `calib_clock = false` and warns that overclocking may affect the warranty and means more power draw and fan noise. The dialog also shows up to which clock the search goes and what limits it (`ladder_cap_mhz` in `warptune.toml`, `calib_clock_max_mhz` or the maker's maximum), plus the power limit and the power supply rating, each with its source. Without a supply rating the option is off and the card says where to enter it. A clock the search finds only takes effect with **Apply**; **Quick check now** never searches the clock.

Power supply reserve. In the clock search the miner's draw on its power supply stays under 80 % of the supply's continuous rating (`psu_max_watts`), the 20 % reserve that overclocking guides recommend. Enter the rating at the miner itself (WarpAxe: Settings → Power supply); WarpTune uses that value first and picks up a later entry without a restart. Next comes `psu_max_watts` in `warptune.toml` (for firmware without that field), then the rating of the supply the board ships with (Bitaxe Gamma 25 W, BitForge Nano 60 W); that default never fails your hand-tuned point itself, only clocks above it. If you clear the rating at the miner, the config's applies again, else the board's. If several miners run on one big supply, split its rating among them so the shares add up to no more than the rating, and enter each share at its miner, e.g. 600 W → 240 + 150 + 100 W; WarpTune keeps each miner under 80 % of its share. For firmware without that field, miners on one shared supply can instead name the same `psu_group`, and their draws are added up. Without any rating, WarpTune does not search above your clock, and the card says where to enter one.

Power limit. Every step up stays under the lowest of these: 90 % of the board's power limit (the firmware's maximum power, or `board_limit_w` in `warptune.toml` where the stock figure is wrong), 80 % of the power supply rating and, if set, your `max_watts`. `max_watts` is optional, only for drawing less on purpose. Without any known limit, the hand point's measured draw is the limit and no step goes above your hand clock.

Limits on the way back. After a reboot, on shutdown and after a protective trip WarpTune sets your hand point again, but never above 100 % of the board's power limit or your `max_watts`, and never above the core regulator's current line. If the hand point itself draws more, WarpTune takes the highest step under the limit, at most at the hand voltage; the card and the journal say so. Where the firmware reports no current line (stock ESP-Miner, NerdOS), the reference firmware's lines for your board apply, marked "board default" on the card; a line from the firmware or from `warptune.toml` always wins.

Chip domains that drop out. Where the firmware publishes per-chip counters (WarpAxe), WarpTune watches each chip's domains. A domain at 5 % or less of its chip's best domain on two decisions in a row counts as dropped out (latched off), and the voltage counts as too low at that point: the voltage search steps up, a calibration stage fails that voltage, a clock is unstable. WarpTune then puts the hand-tuned point back for a moment, which usually brings the domain back, and keeps that step's voltage higher from then on; a second dropout at the same step within two hours takes the miner one step down, and a running calibration pauses instead of failing. Once the domain has been back for about 10 minutes, the calibration continues on its own, at most twice per calibration, and never returns to the voltage at which the domain dropped out; after a third dropout it stays paused until you press Resume. The card names the domains that dropped out. Such a loss is often only 1–3 % of the hashrate, too little for the pool's shares to show (a NerdOctaxe with one weak chip).

Chain re-init at the hand point (WarpAxe). If a domain latches off while the miner already runs at its hand point, there is no higher voltage for WarpTune to step to. On WarpAxe boards it then switches the chips off and on through the firmware's chain init. It first records the switch-off, switches off and waits up to 10 seconds until the core voltage is really gone. Then it keeps the chips off for a while (`chain_reinit_off_hold_s`, 15 seconds by default, 5 to 60, also per miner: capacitors and chip domains lag behind the voltage reading, and about 5 seconds proved too short on an Octaxe), switches them back on and waits for the chain to report ready. The chips are never left off: if the board does not confirm the switch-off in time, WarpTune switches on anyway (harmless at that point); if switching on fails, it tries twice more (three attempts in all) with growing pauses and then restarts the board, which always comes up with the chips on. If WarpTune itself restarts in the middle of the sequence, it finds its open switch-off at the next start and switches the chips back on, but only for a switch-off it caused itself: chips you switch off in the WarpAxe UI (System → Maintenance) stay off. It judges the domains again only a minute after the chain is really ready, because the firmware refills its counters from zero. This happens at most three times an hour (also across a restart), only under live control and with a five-minute settle after each; a domain still off after the settle, or one that dropped out while a calibration was measuring, gets its re-init later without a new dropout. The card shows the last re-init ("chain re-initialised … (chips off → on)") or why it failed. Boards without this interface, and for now NerdNOS boards, stay at the hand point as they are.

Steady state, and domains given up on. A re-init also waits until the miner is steady, because a re-init into a board that is still warming up tells nothing: the chip temperature within 3 °C of its target, the fan within ±5 % for two minutes, and at least five minutes since the board booted and since the last ready. Until then the card says what WarpTune is still waiting for, and the domains stay reported. If the same domain is off again within five minutes of the ready that followed a re-init for it (a domain that never comes back counts the same), twice in a row, WarpTune gives up on it: no more re-inits for that domain (the others still get theirs, and the hour's budget is not spent on it). The journal records `domain_given_up` and the card says **"chip 2 domain 2 keeps dropping out at 700 MHz @ 1210 mV after re-inits: left as it is — switch the miner off at the power supply for a few seconds; if it still drops out after that, it is a margin question (hand voltage or clock)"**. A reboot or a chain re-init keeps the board's controller and auxiliary supplies up; only a cold start takes everything down. On an Octaxe on 9 October exactly this domain did not come back after a warm reboot (firmware update) and four re-inits (5.5 and 15 seconds off, one of them by hand in a steady state); switching the power supply off for a few seconds brought all 32 domains back. Only if a domain still drops out after such a cold start is it a margin question, and that call is yours: a little more hand voltage or a lower clock. A give-up is re-armed when the point changes, when the board boots, or after 24 hours; a WarpTune restart does not clear it (WarpTune reads it back from the journal when it starts).

Per-chip readings as a second witness. NerdOS 1.1.1-alpha4 and later and WarpAxe 0.1.19 and later serve, under `/api/v2/dashboard`, each chip's hashrate and the hashrate it loses to errors. WarpTune reads them on every decision: where the firmware has no one-minute error rate (NerdOS), the error share over all chips stands in for it, and a single chip whose error share stands well above the others' (at least 3 points and three times the median, with three chips or more) counts as a second sign that the point is short of good, whatever the total says.

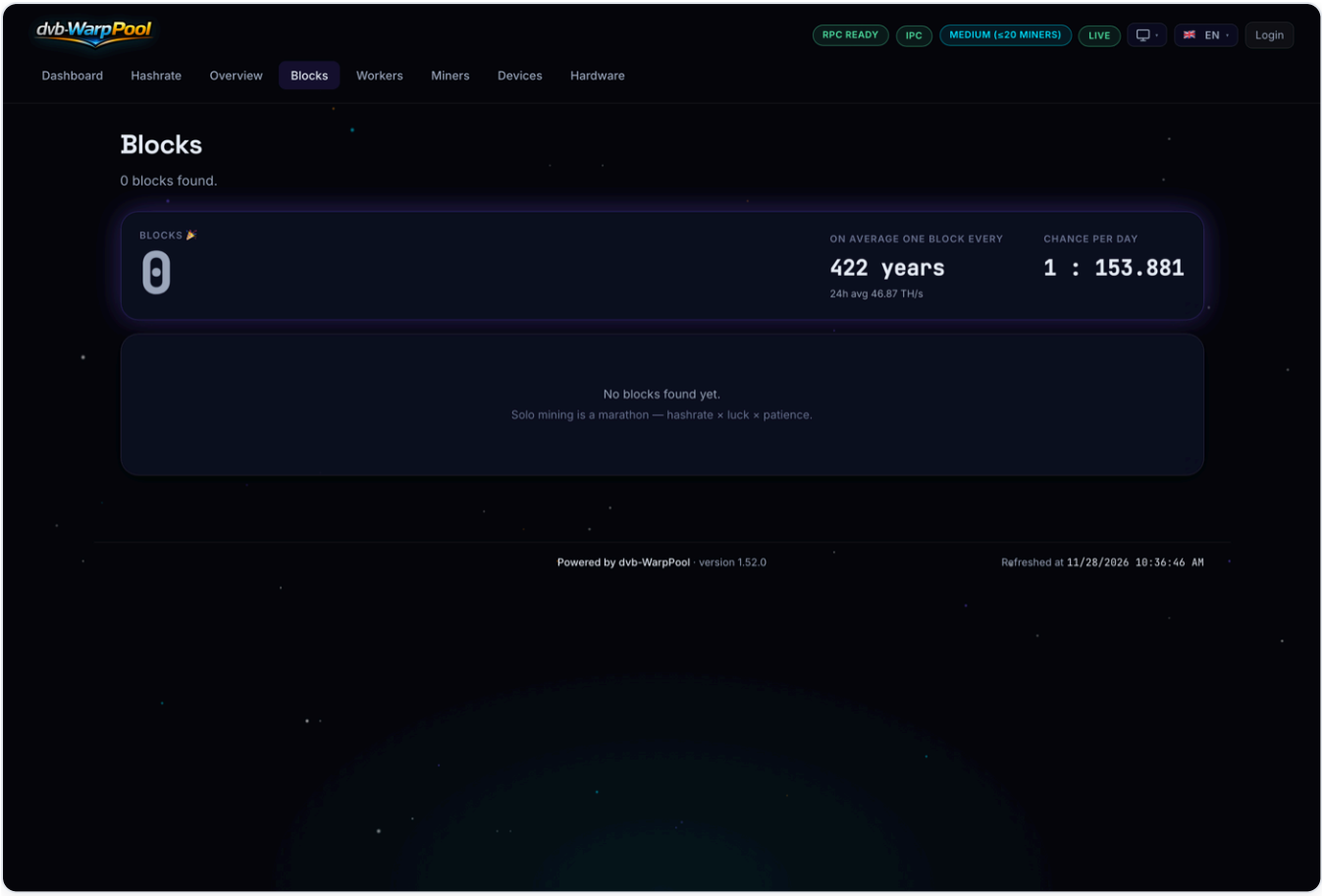
Stall or dead chip? If the firmware reports a hashrate of 0 while the chip counters keep running, it is usually the path to the pool that hangs, not the chips. WarpTune then restarts the miner on its hand point after a while, but marks no clock as bad and no voltage as failed, and a running calibration carries on. If the chip counters stop too, the miner goes back to its hand point and restarts as before, but only the step it was running on is held off, no longer every step from there up. Only an electrical failure (the regulator delivering 0 mV) still makes the step a ceiling.

Without a calibration, a miner with WarpTune's voltage search on shows a line **Voltage checked**: the voltage the search found for the current frequency against WarpTune's table voltage for it ("needs 960 mV (table 940)", or "runs at the table voltage"), and why it sits higher: the voltage that failed below it with the chip error rate it failed at and the rate now ("at 950 mV too many chip errors (4.6 %, now 3.3 %)"), or "hashrate too low" where the firmware counts no errors. The power figure there is an estimate from the voltage.

The button appears only where a calibration makes sense: the miner is under live control, coupled to a pool (the pool's shares judge each voltage), not an Avalon (its control board owns the voltage), on a board with a voltage regulator, not paused, with a fresh WarpTune snapshot and, on fixed maker presets (BitForge Nano), only with the clock search on; otherwise the line names the reason. Every button is an admin action and lands in the audit log (`tune.calib.*`); it reaches the sidecar only with a shared key: enter it under **Admin → Profile → dvb-WarpTune coupling** (or name an environment variable in `[mining.tune] token_env`), and put the same secret into the sidecar's `sidecar.control_token_env`; otherwise the sidecar refuses every command and the pool keeps displaying. A pool without the key shows that on the card instead of the buttons, and an error from a button appears on the card under the buttons. Setup and the guardrails are described in `scripts/warptune-setup.md` in the repository.

Blocks (menu "Blocks")

Every block your pool has found. The top card shows the **Blocks** 🎉 count (grey at zero, orange once there is one) next to the pool's own odds at its 24-hour average hashrate: **On average one block every …** (days or years) and the **Chance per day** as "1 : N". The table lists **When**, **Worker**, **Job**, **Block hash** (a clickable explorer link when accepted), **Height** and **Status** (accepted / rejected + reason / pending); on a phone Job and Block hash are hidden. Empty, it reads "No blocks found yet." It refreshes every 10 seconds.

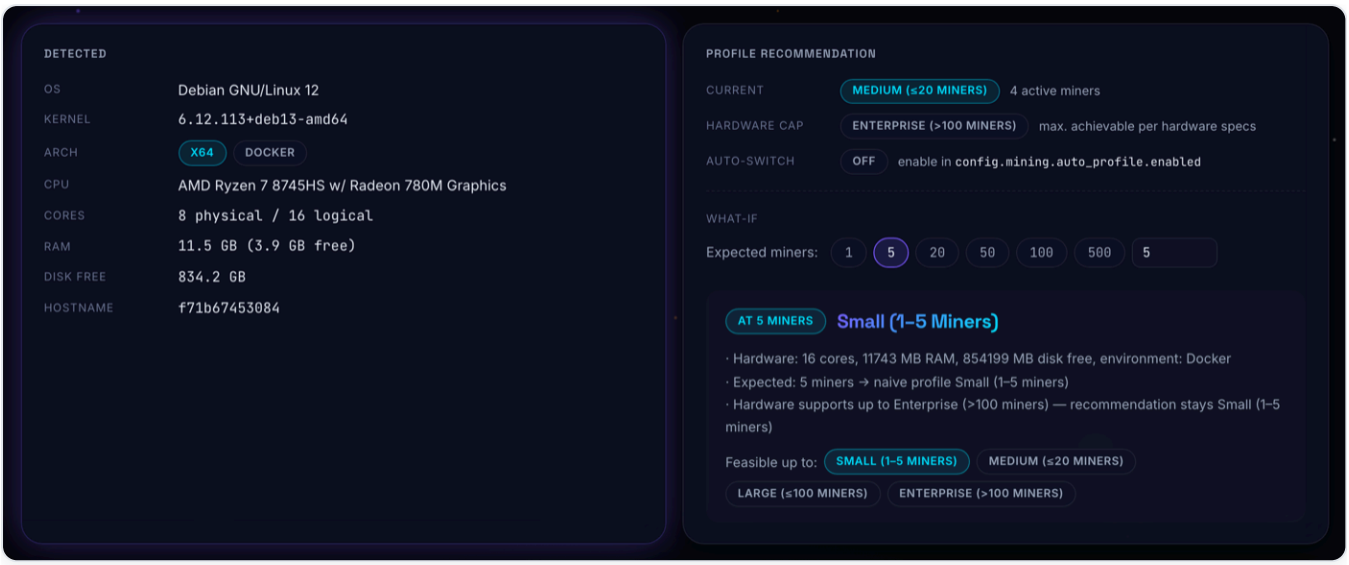


The Blocks tab: the found count with the pool's solo odds, then every solved block with its worker, height and status.

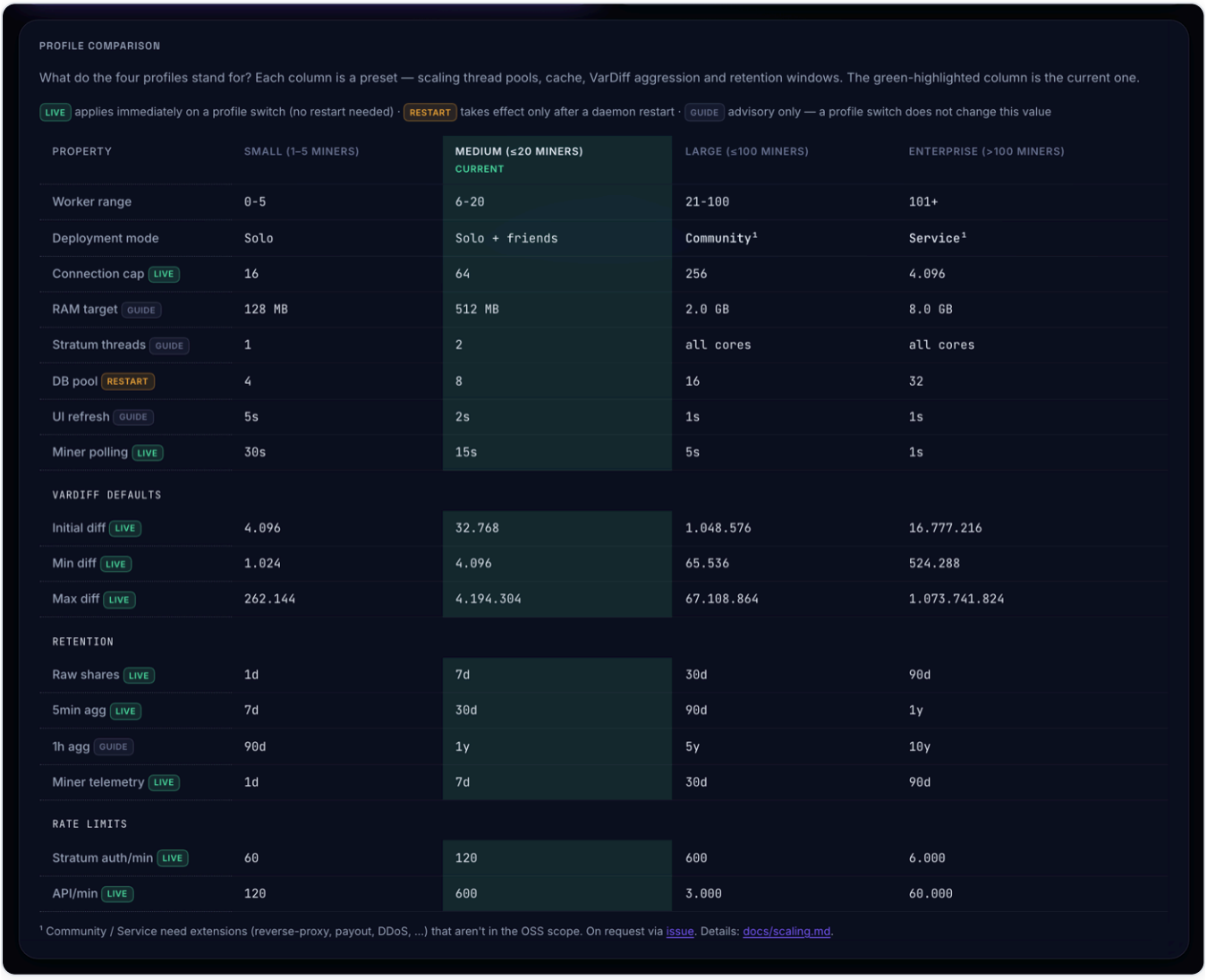
Hardware (menu "Hardware")

The pool host's own resources and the size-profile picture. Three cards:

- **Detected** — OS, kernel, architecture, CPU, cores, RAM, free disk and hostname.
- **Profile recommendation** — your current profile, the hardware "cap" (the largest profile your machine can handle), and whether auto-switch is on. A "What-if" control lets you try miner counts (chips for 1·5·20·50·100·500 or a free field) and see the recommended profile.
- **Profile comparison** — a table comparing all four profiles across worker range, connection cap, retention, VarDiff defaults, rate limits and more. Each value carries a marker: **live** (applies instantly on a profile switch), **restart** (needs a restart) or **guide** (a rough target only).



Hardware: live host detection plus the profile that fits your miner count.



The profile comparison table — "live", "restart" and "guide" tell you when each value takes effect.

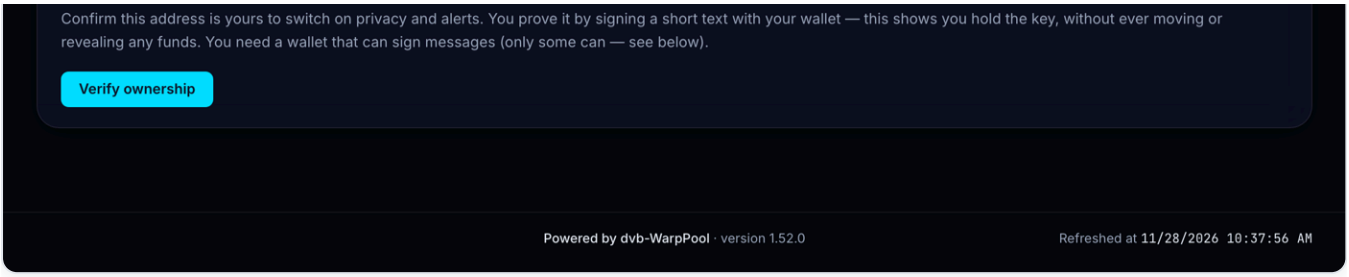
8 · Your public wallet page (`/users`)

Every payout address that has ever mined on your pool gets its own status page at `/users/<address>`. It needs no login, it is safe to share, and it is the page your miners will bookmark to watch their own rigs.

Open it in two ways:

- On the **Workers** tab (chapter 7), click any wallet row.
- Go straight to `https://<your-host>/users/<bitcoin-address>`.


dvb-WarpPool
RPC READY
IPC
MEDIUM (≤20 MINERS)
LIVE
EN
Login
Dashboard
Hashrate
Overview
Blocks
Workers
Miners
Devices
Hardware
All wallets
bc1qtgmlr7cw…57vfeqz0
Public miner overview
BLOCK HEIGHT
977.921
NETWORK HASHRATE
949.00 EH/s
DIFFICULTY
145T
BTC PRICE
$59,575
Total hashrate
57.2 TH/s
1m
5m
1h
1d
7d
BEST SHARE
100.0 TH/s
75.00 TH/s
50.00 TH/s
25.00 TH/s
0 H/s
1.74G
1.31G
872M
436M
0
10:36
12:00
14:00
16:00
18:00
20:00
22:00
00:00
02:00
04:00
06:00
08:00
10:00
BEST EVER
1.13T
RIGS ONLINE
4 / 10
SHARES
3.396.838
BLOCK ODDS
At today's difficulty and your current hashrate — pure probability, not a forecast.
Chance in the next 24 hours
1 in 105,000
Chance within one year
1 in 289
50/50 point
~200 years
Luck so far: Expected blocks from your accepted shares since 7/17/2026: 0.001 — found: 0. 99.89% of miners with your history would also have none yet.
Solo mining is memoryless — the odds reset every second. No amount of waiting makes a block more likely.
RIGS
RIG
HASHRATE
BEST SHARE
LAST SHARE
NerdOctaxe
warpaxe/0.1.50 (nerdoctaxe-gamma)
9.12 TH/s
102.38G
1s ago
AvalonQ
cgminer/4.11.1
44.6 TH/s
1.13T
2s ago
NerdaxeGaia
warpaxe/0.1.50 (nerdaxe-gaia)
1.60 TH/s
1.49G
7s ago
bitaxe-naja-duo
warpaxe/0.1.50 (bitaxe-naja-duo)
1.96 TH/s
3.96G
9s ago
bitaxe602
warpaxe/0.1.50 (bitaxe-gamma)
offline
1.23G
20h ago
WarpMiner
warpaxe-cpu/0.1.49 (nerdminer-class)
offline
1.000
11/25/2026
NerdQaxe++
warpaxe/0.1.49 (nerdqaxe-plusplus)
offline
3.53G
11/25/2026
BitForgeNano
warpaxe/0.1.48 (bitforge-nano)
offline
39.52G
11/23/2026
NerdNOS
warpaxe/0.1.48 (nerdnos)
offline
1.51G
11/23/2026
NerdAxeGamma
NerdAxe/BM1370/v1.1.0
offline
10.51G
9/22/2026
OWNER AREA



The public wallet page: aggregated hashrate with 1m–7d windows, the 24-hour chart with best-share peaks, the honest block odds, and one row per rig.

What it shows

At the top, "All wallets" leads back to the **Workers** tab, and a strip shows the network context: block height, network hashrate, difficulty and the BTC price. Below it:

- **Total hashrate** in large type, aggregated across every rig that logs in under this address, with a window switch — **1m · 5m · 1h · 1d · 7d** (default 5m). The switch changes this number only, not the chart.
- The **24-hour hashrate chart** for this address, smoothed over 15 minutes, with each best share drawn as a dot so lucky shares stand out.
- **Best ever** — the highest-difficulty share this address has ever submitted.
- **Rigs online** (rigs with a share in the last ten minutes, out of all rigs) and the total **Shares** counter.
- A **Rigs** table — one row per `address.rig` login, with a green or grey dot for online/offline, its hashrate, best share, last-share time and detected mining software. If the owner shares a WarpTune badge (see the Owner Area below), a **WarpTune** column shows each rig's mode, frequency and state. On a phone the best-share and last-share columns are hidden.

The Block-odds panel

Below the stats sits an honest answer to the only question that really matters in solo mining: *what are my chances?* The old builds showed a single "estimated time to block" — for a home rig that reads "~12,000 years", which sounds like "never" and quietly hides the one fact that makes solo mining make sense at all: the process is **memoryless**. Every second is a fresh draw; there is no queue, no progress bar, nothing getting closer. The panel replaces that one misleading number with the real picture:

- **Chance in the next 24 hours** and **chance within one year** — computed from your current hashrate and today's network difficulty. Long odds are shown as "**1 in N**" (for example "1 in 6.3 million"); once a probability climbs above 1 % it is shown as a percentage, always rounded *down* so it never overstates your chances.
- **50/50 point** — the time after which finding a block is more likely than not (the median, not the average). This is usually many years; that is normal and it is not a countdown.
- **Luck so far** — the number of blocks your accepted work "should" have produced (a fraction, almost always far below 1), the number you actually found, and — if none yet — what share of miners with exactly your history would also still be empty-handed. This is measured from the day the pool started tracking it, shown as "since <date>", never as an all-time claim.

None of this changes how mining works — it is the same lottery, described honestly. No amount of waiting makes a block more likely; only more hashrate or a lower difficulty does. When the address is offline (no current hashrate) the panel shows a dash, exactly like the old tile did.

Firmware & ckstats. The same data is served as JSON at `/api/users/<address>` in the ckpool field format (`hashrate1m` … `hashrate7d`, `bestshare`, `bestever`, `worker[]`), so ckstats-style dashboards and miner firmware can read it directly. The block-odds figures are added as an `odds` object on the same response (24-hour and yearly probability, the 50/50 point in seconds, expected vs. found blocks), computed server-side so third-party tools get identical numbers; it is `null` when the address is offline.

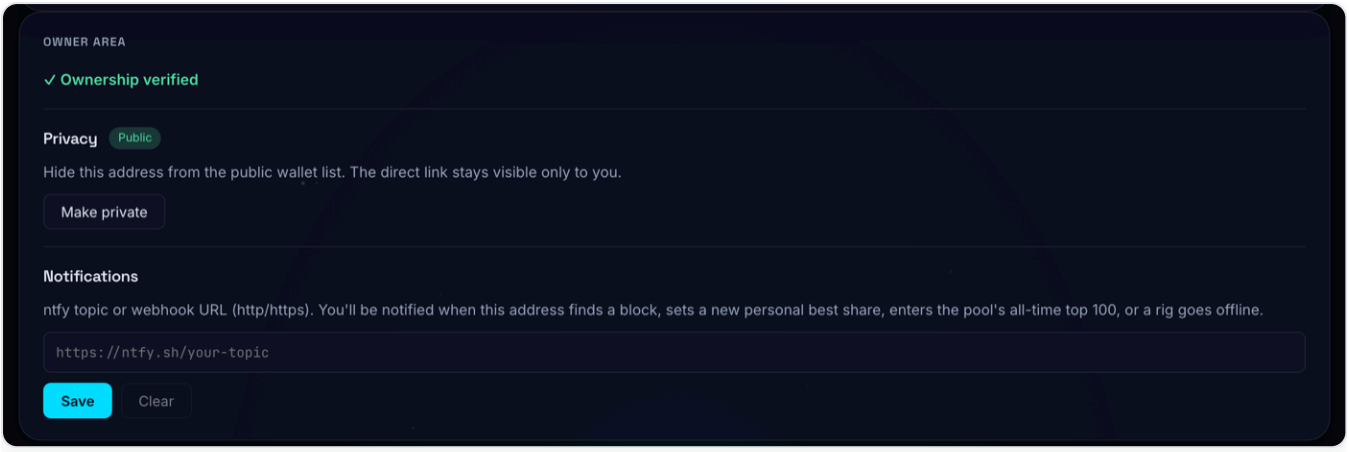
The Owner Area

Below the stats, anyone can prove they own the address — without an account and without moving a single satoshi — by signing a short challenge message with the address's private key (the same "Sign message" feature your wallet already has). Verifying unlocks these owner-only controls:

- **Privacy** — hide this address from the public **Workers**/wallet list. The direct `/users/<address>` link keeps working, but only for you.
- **Notifications** — an ntfy topic or webhook URL (http/https) that gets pinged on this address's milestones: it finds a **block**, it sets a new **personal-best share** (across all of its rigs, not just one), it first enters the pool's **all-time top 100** best shares, or one of its rigs goes **offline**. Each kind has its own cooldown so a good run does not turn into a stream of messages, and a found block sends a single headline rather than three overlapping alerts.
- **WarpTune badge** (since v1.31.0) — create a **push token** for this address, put it into the environment variable whose name `warptune.toml` gives as `pool_push_token_env`, on the machine where your dvb-WarpTune sidecar runs, and set `pool_push = true`. The sidecar then sends its snapshot to this pool and the rigs table shows a badge per rig: mode, frequency, dry run / live / control off / stale; hover it for the last decision. Visitors see a reduced badge (no last decision) only after **Show badge to visitors**. The token is shown once, can be rotated or revoked here, and the pool never sends anything back to a miner.
- **Coinbase text** (only on a per-worker pool; on by default there, `[mining] owner_coinbase_text = false` switches it off) — up to 16 printable characters (no `/`) that go into the coinbase of every block the pool builds for your address, right after the pool tag. Takes effect with the next job.



Step one: WarpPool shows a short challenge text. Sign it with the wallet that holds the address and paste the signature back. Taproot (`bc1p…`) addresses work here too — with a wallet that can sign **BIP-322** messages.



The Owner Area after a successful signature: a privacy toggle and a per-address notification target.

Which addresses can verify? Message signing works for legacy (`1…`), SegWit (`bc1q…`) and wrapped-SegWit (`3…`) addresses. **Taproot** (`bc1p…`) works too, with a wallet that can sign **BIP-322** messages, such as Sparrow.

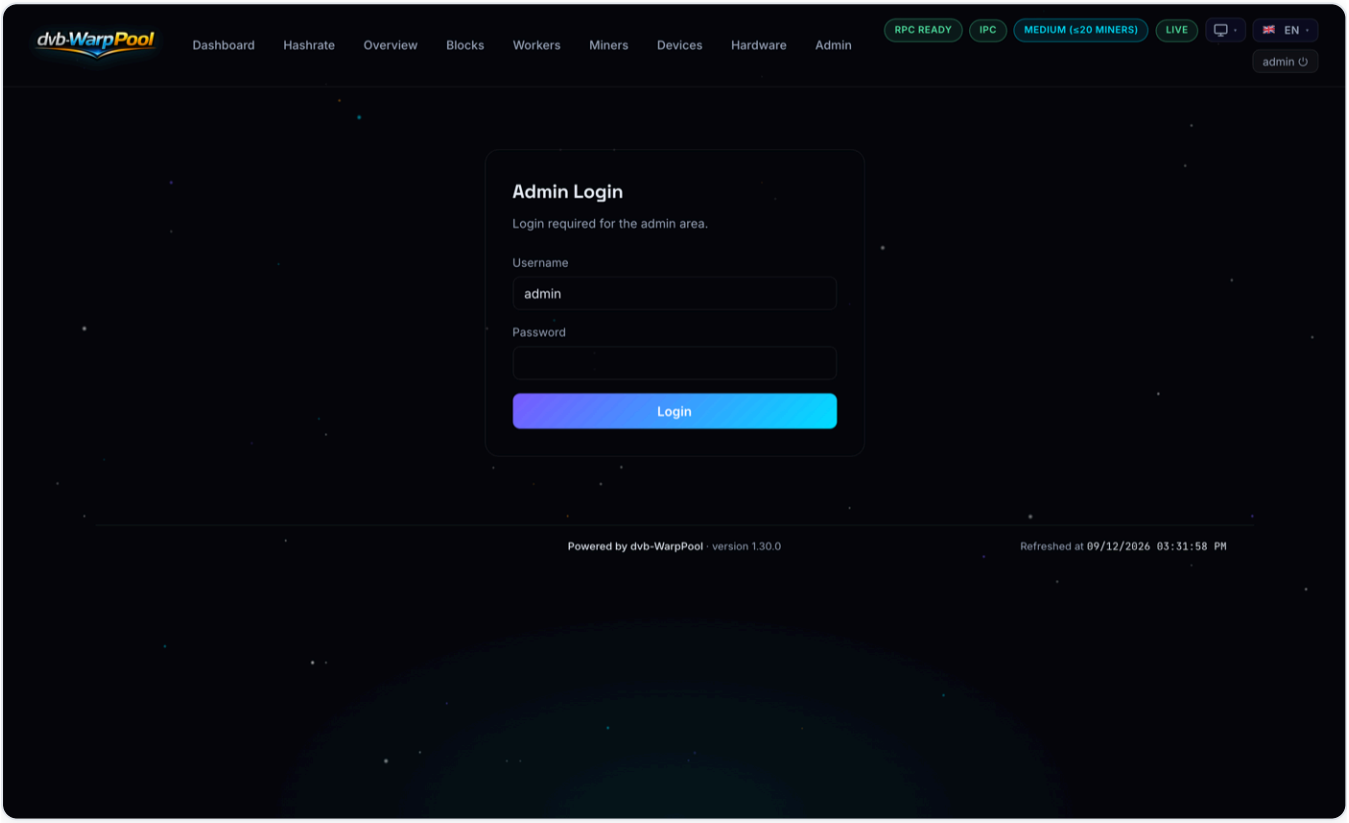
No account, ever. The signature only proves ownership of this one address; it grants a browser cookie that expires on its own. It never touches your funds and never reveals your private key.

9 · The Admin area, page by page

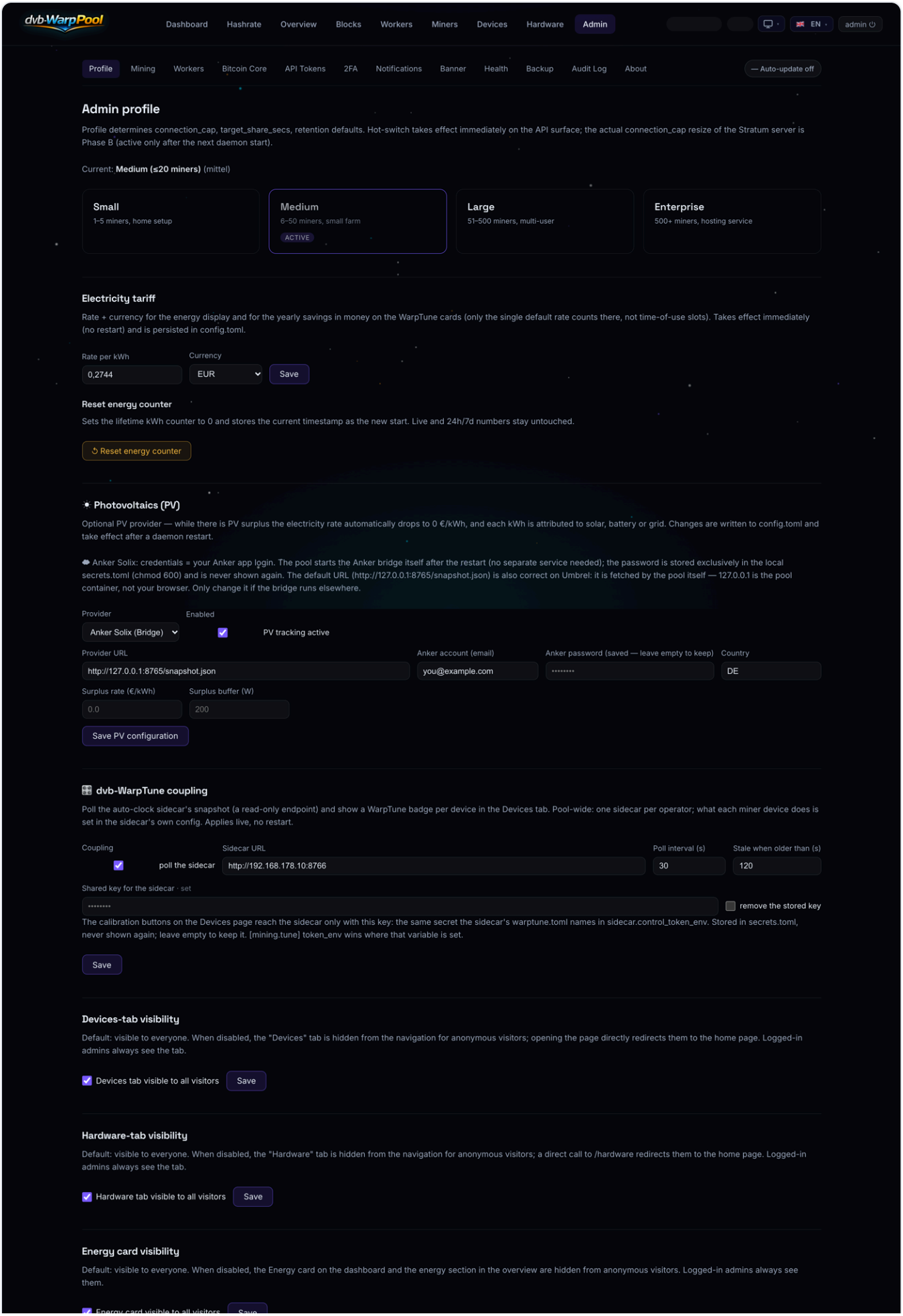
Everything you might tune lives under **Admin**. It is protected by a login (a session lasts 24 hours by default), so the first thing you'll meet is the login screen.

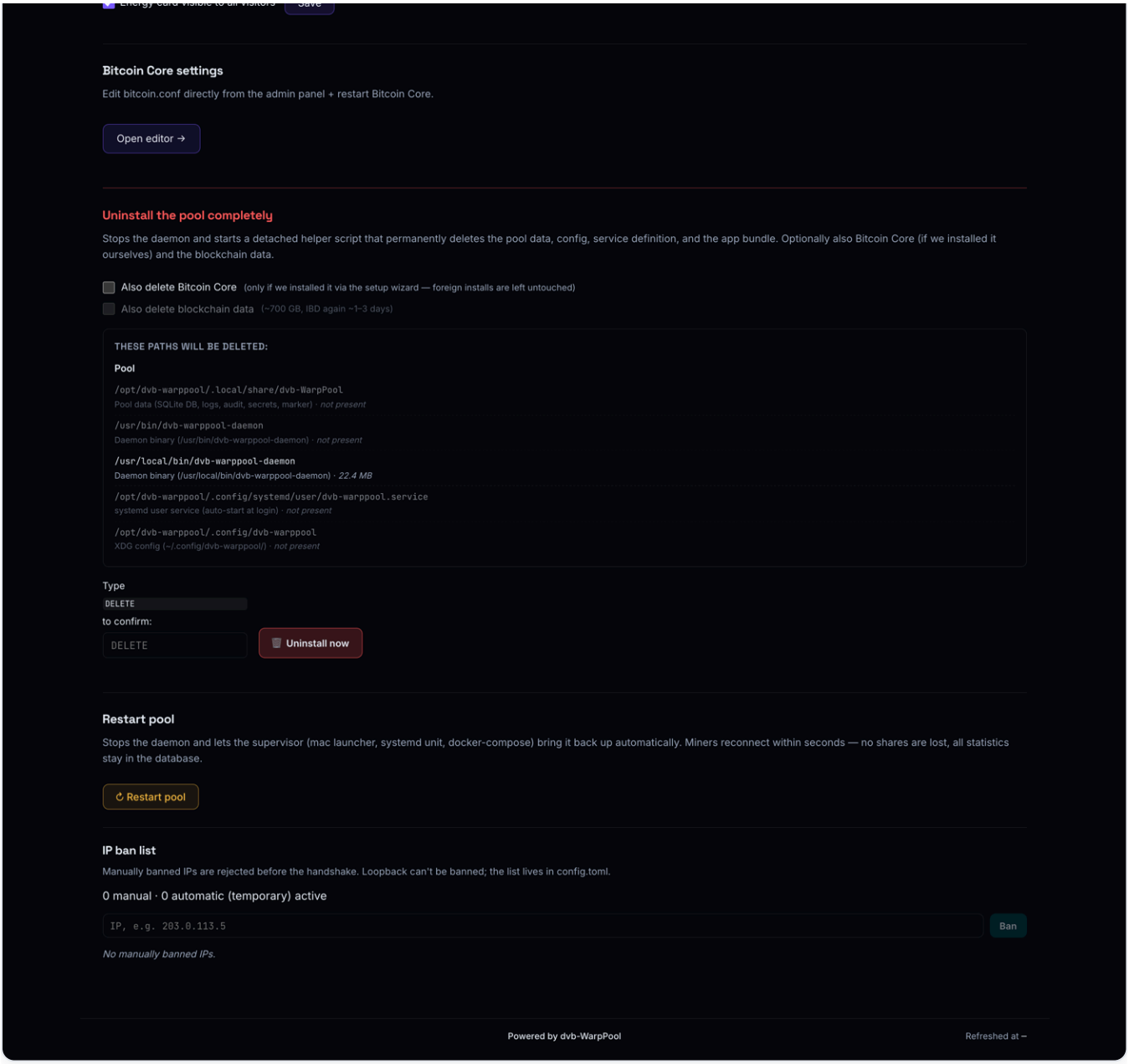
Login & first-time setup

The **very first** time, there is no admin account yet, so the login page shows a **"Set up admin account"** form: pick a username (default `admin`), a password (at least 8 characters) and confirm it, then click **"Create account & sign in"**. No restart is needed — you're logged straight in. After that, the same page is a normal **Login** (username + password), and — if you've enabled 2FA — it asks for a 6-digit code on the second try.



The admin login. On a brand-new install this screen instead shows “Set up admin account”.


dvb-WarpPool
Dashboard
Hashrate
Overview
Blocks
Workers
Miners
Devices
Hardware
Admin
EN
admin
Profile
Mining
Workers
Bitcoin Core
API Tokens
2FA
Notifications
Banner
Health
Backup
Audit Log
About
— Auto-update off
Admin profile
Profile determines connection_cap, target_share_secs, retention defaults. Hot-switch takes effect immediately on the API surface; the actual connection_cap resize of the Stratum server is Phase B (active only after the next daemon start).
Current: Medium (≤20 miners) (mittel)
Small
1–5 miners, home setup
Medium
6–50 miners, small farm
ACTIVE
Large
51–500 miners, multi-user
Enterprise
500+ miners, hosting service
Electricity tariff
Rate + currency for the energy display and for the yearly savings in money on the WarpTune cards (only the single default rate counts there, not time-of-use slots). Takes effect immediately (no restart) and is persisted in config.toml.
Rate per kWh
0,2744
Currency
EUR
Save
Reset energy counter
Sets the lifetime kWh counter to 0 and stores the current timestamp as the new start. Live and 24h/7d numbers stay untouched.
Reset energy counter
Photovoltaics (PV)
Optional PV provider — while there is PV surplus the electricity rate automatically drops to 0 €/kWh, and each kWh is attributed to solar, battery or grid. Changes are written to config.toml and take effect after a daemon restart.
Anker Solix: credentials = your Anker app login. The pool starts the Anker bridge itself after the restart (no separate service needed); the password is stored exclusively in the local secrets.toml (chmod 600) and is never shown again. The default URL (http://127.0.0.1:8765/snapshot.json) is also correct on Umbrel: it is fetched by the pool itself — 127.0.0.1 is the pool container, not your browser. Only change it if the bridge runs elsewhere.
Provider
Anker Solix (Bridge)
Enabled
PV tracking active
Provider URL
http://127.0.0.1:8765/snapshot.json
Anker account (email)
you@example.com
Anker password (saved — leave empty to keep)
Country
DE
Surplus rate (€/kWh)
0.0
Surplus buffer (W)
200
Save PV configuration
dvb-WarpTune coupling
Poll the auto-clock sidecar's snapshot (a read-only endpoint) and show a WarpTune badge per device in the Devices tab. Pool-wide: one sidecar per operator; what each miner device does is set in the sidecar's own config. Applies live, no restart.
Coupling
poll the sidecar
Sidecar URL
http://192.168.178.10:8766
Poll interval (s)
30
Stale when older than (s)
120
Shared key for the sidecar · set
remove the stored key
The calibration buttons on the Devices page reach the sidecar only with this key: the same secret the sidecar's warptune.toml names in sidecar.control_token_env. Stored in secrets.toml, never shown again; leave empty to keep it. [mining.tune] token_env wins where that variable is set.
Save
Devices-tab visibility
Default: visible to everyone. When disabled, the "Devices" tab is hidden from the navigation for anonymous visitors; opening the page directly redirects them to the home page. Logged-in admins always see the tab.
Devices tab visible to all visitors
Save
Hardware-tab visibility
Default: visible to everyone. When disabled, the "Hardware" tab is hidden from the navigation for anonymous visitors; a direct call to /hardware redirects them to the home page. Logged-in admins always see the tab.
Hardware tab visible to all visitors
Save
Energy card visibility
Default: visible to everyone. When disabled, the Energy card on the dashboard and the energy section in the overview are hidden from anonymous visitors. Logged-in admins always see them.



The Admin area opens on the Profile page: the size-profile cards, electricity tariff, energy reset and PV settings. The sub-navigation lists every admin page.

Across the top of Admin is a sub-navigation — **Profile** · **Mining** · **Workers** · **Bitcoin Core** · **API Tokens** · **2FA** · **Notifications** · **Banner** · **Health** · **Backup** · **Audit Log** · **About** (plus **Donations** after Notifications on a public pool) — and an update badge on the right (green "Up to date", orange "Update available", grey "Auto-update off", or yellow "Update check failed"). The Update page has no menu entry: "Update available" on the badge opens it.

Profile (Admin → Profile)

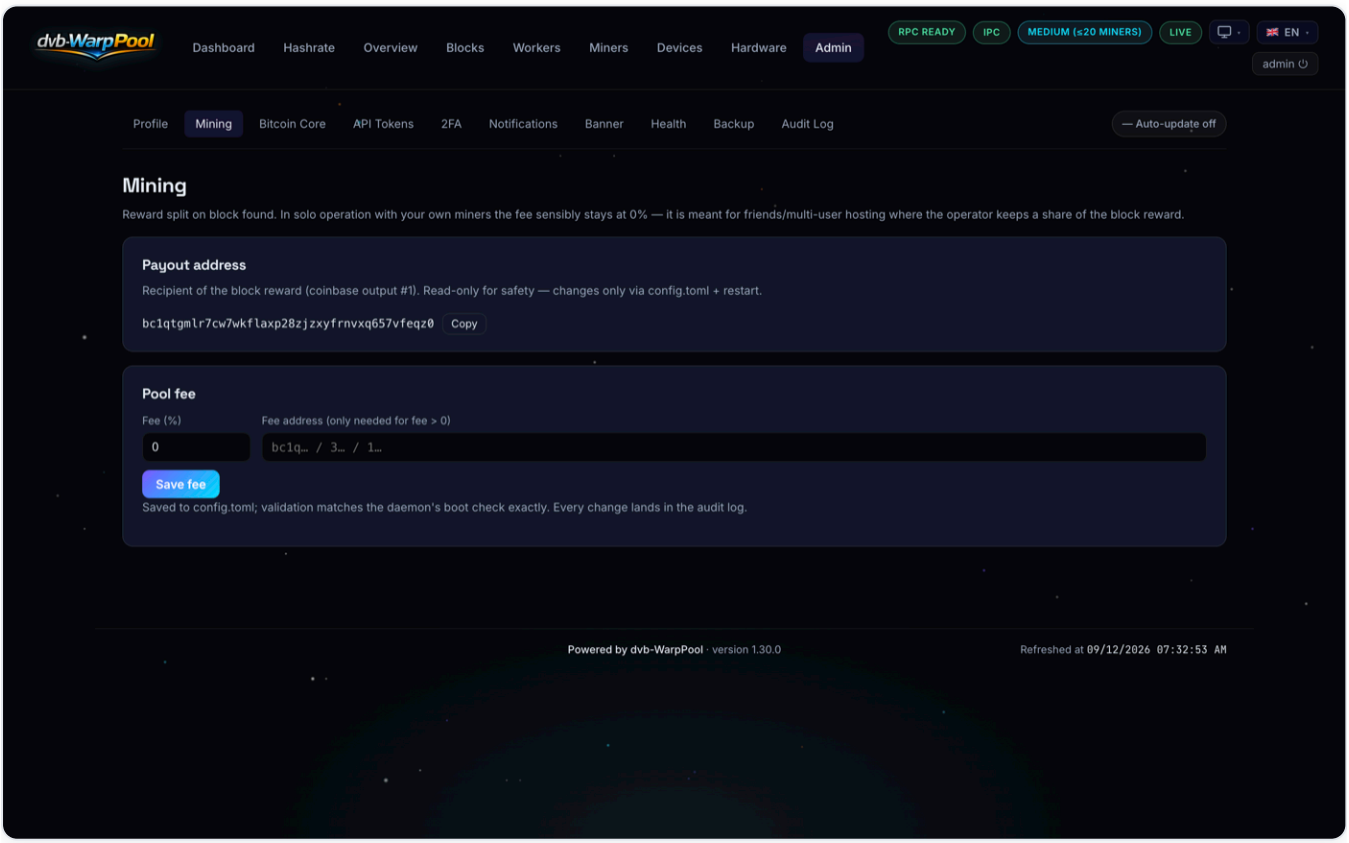
The busiest admin page. From top to bottom:

- **Profile hot-switch** — four cards: **Small** (1–5 miners, home setup), **Medium** (6–50, small farm), **Large** (51–500, multi-user) and **Enterprise** (500+, hosting service). Switching is instant, *except* the connection cap, which needs a restart. Choosing Large or Enterprise pops an "operator mode" warning first (these modes are meant for hosting others and show a standing orange banner while active).
- **Electricity tariff** — rate per kWh + currency + Save. Takes effect immediately.

- **Reset energy counter** — zeroes the lifetime kWh (Live/24h/7d are untouched), after an inline "Really reset the lifetime counter to 0?" confirmation.
- **Photovoltaics (PV)** — the same solar providers as the wizard, plus surplus rate and buffer. **Saving PV config needs a daemon restart** to take effect.
- **dvb-WarpTune coupling** (since v1.31.0) — switch the polling of the auto-clock sidecar's snapshot on or off and enter its snapshot URL, the poll interval, the age after which the snapshot counts as stale, and the shared key for the calibration buttons; applies live, no restart. The Devices tab then shows the WarpTune badge (chapter 7).
- **Visibility toggles** — three checkboxes to show or hide the Devices tab, the Hardware tab and the Energy card *for anonymous visitors*. (This is why a tab may appear "missing" when you're logged out.)
- **Uninstall** — see chapter 14.
- **Restart pool** — a "↻ Restart pool" button for any change marked "restart required". Miners reconnect within seconds and no shares are lost; the page reloads after about 10 seconds.
- **IP ban list** — at the bottom of the page: enter an IP and click **Ban** (or **Unban**); banned IPs are rejected before the handshake. Loopback can't be banned, and the list is kept in `config.toml`.

Mining (Admin → Mining)

Your **payout address** is shown here **read-only** — for safety it can only be changed in `config.toml`. Below it, the **pool fee** (percentage + fee address, with a confirmation checkbox if the fee is above zero). A fee change takes effect **after a restart and from the next block onward**, and is recorded in the audit log.

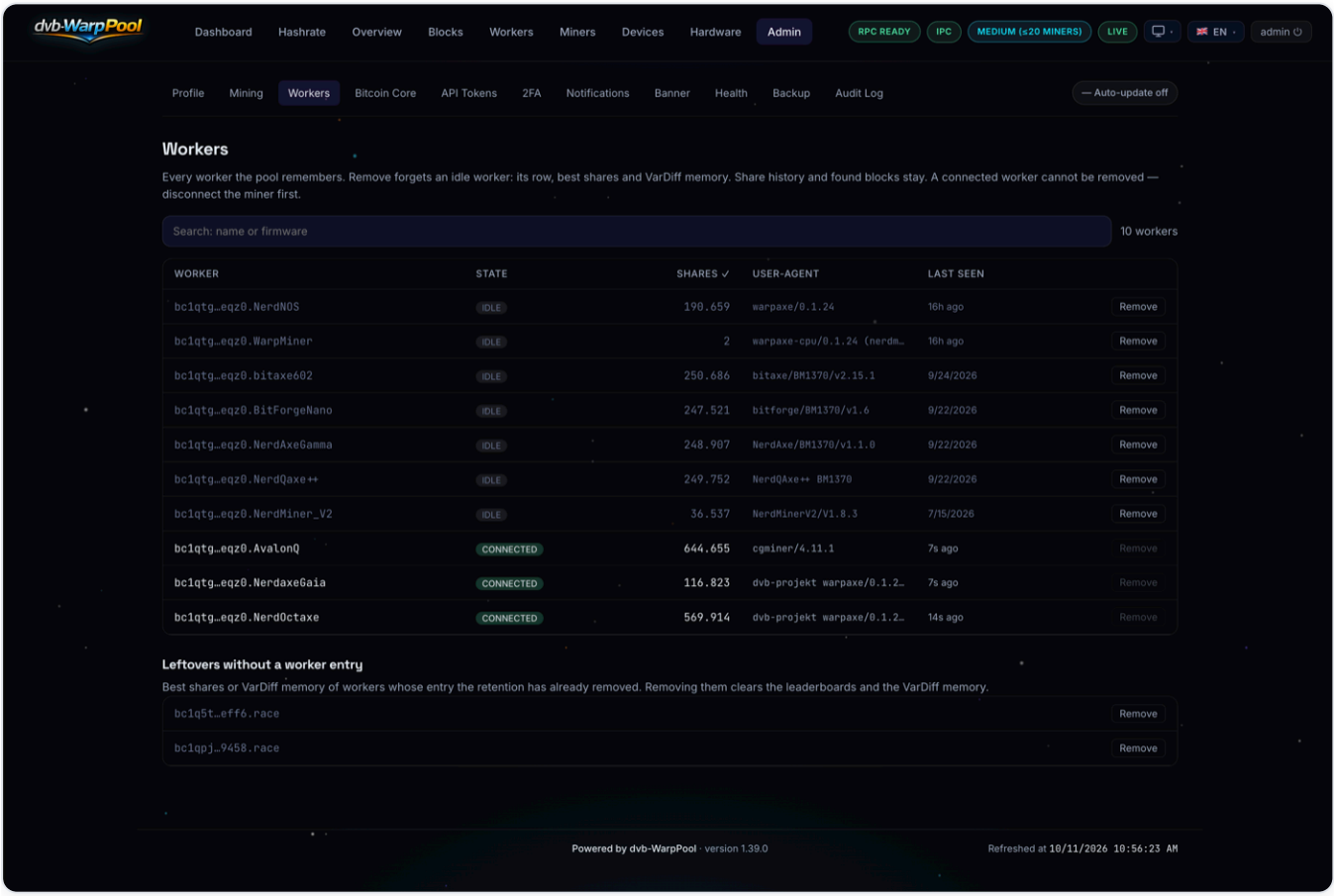


Admin → Mining: the read-only payout address and the optional pool fee (0 % for a true solo pool).

Workers (Admin → Workers)

This page lists every worker the pool remembers, that is every login a miner has ever connected with, with its **State**, accepted shares, User-Agent (firmware) and **Last seen**; the removable ones come first. The state is **connected** (a stratum session is open right now), **recently active** (shares in the last minute but no session any more, for example a miner you have just switched off) or **idle**. The search box (**Search: name or firmware**) filters by name or user agent. If the pool knows more than 500 workers, the page lists only the 500 most recently seen and says so above the table (**only the N most recently seen of M known workers are listed**). **Remove**, after a confirmation, makes the pool forget a worker: its row, its best shares and its VarDiff memory (V1 and Stratum V2). Share history and found blocks stay. Handy for old test names or typos that would otherwise sit in the lists and the leaderboard for ever. Only a **connected** worker cannot be removed (its button is disabled); disconnect the miner first. The name is taken exactly as the miner logged in, blanks at the start or end included. If the same name connects again later, it starts afresh. Every attempt, refused ones included, is recorded in the audit log (`worker.delete`).

Below it, a second table, **Leftovers without a worker entry**, appears when there are any: names that still sit in the best shares or the VarDiff memory although the retention has already removed their worker entry. They do not show up in the list above; **Remove** clears them from the leaderboards and the VarDiff memory in the same way.



Admin → Workers: every worker the pool remembers. Remove forgets an idle one; a connected worker stays.

Donations (Admin → Donations) — public pools only

This page appears in the admin menu **only when the pool runs in per-worker mode** (a public 0% pool). A per-worker pool keeps none of the reward, so a voluntary tip is the only way supporters can help cover your hosting — and this page is where you set the addresses for it.

Field	What to enter
On-chain address	Any Bitcoin address you want tips sent to. It's validated when you save. Shown on the public dashboard as a copyable address and a `bitcoin:` QR code a visitor's wallet can scan.
Lightning address	A Lightning address, LNURL or BOLT12 string (stored as you enter it). Shown as its own copy field and QR code.

Leave either field blank to hide that option. When at least one is set, a **"Enjoying the pool?"** card appears at the bottom of the public dashboard. These addresses are purely informational — they are never mixed into block construction, so setting one can't affect the rule that a per-worker pool pays the finder the full reward. Saving takes effect immediately (no restart) and is recorded in the audit log.

Banner (Admin → Banner) — a scrolling notice on your pool page

Sooner or later you need to tell the people mining on your pool something: you are restarting the node on Sunday morning, your internet provider has announced an outage, or a port has changed. This page puts that message where they will actually see it — as a slowly scrolling strip along the very top of the pool page, above the dashboard, visible to every visitor whether they are logged in or not.

Field	What to enter
Announcement text	The message itself, up to 200 characters. It is shown exactly as you type it — plain text only, never interpreted as HTML or formatting. Line breaks and other control characters are refused, because they would tear the scrolling strip apart.
Runtime and **Unit**	How long the notice should stay up: a number plus *minutes*, *hours* or *days*. The shortest allowed is one minute, the longest 90 days. The end time is worked out from the moment you press Start.

Start puts the notice live. **Stop** takes it down again before its time is up — useful when the maintenance finished early. Above the fields a status line tells you whether a notice is currently running, and until when.

The point of the runtime is that **you do not have to remember to remove it**. The end time is stored next to the text, so the notice disappears on its own when the time is over — even if the pool is restarted in between. A forgotten maintenance notice cannot sit on your page for weeks.

Two details that matter for your visitors: pointing at the strip with the mouse, or reaching it with the Tab key, **pauses the scrolling**, so a long notice can be read to the end; and anyone who has switched on „reduce motion“ in their operating system sees the text standing still instead of moving.

> **The banner shows everywhere in the interface**, not only on the dashboard — including while you are working in the admin area. That is deliberate: it doubles as confirmation that your notice really is live.

Bitcoin Core (Admin → Bitcoin Core) — including GBT ⇄ IPC

Two parts. The first is a **bitcoin.conf editor** (on a self-managed host): a **Form** tab with the common fields (network, RPC user/password/port, ZMQ endpoints, prune, dbcache, txindex) and an **Advanced (free-text)** tab. Saving backs up the old file and writes a new one; changes apply after you restart Bitcoin Core with the **"↻ Restart Bitcoin Core"** button.

The second part is the one to understand:

Template source: GBT + ZMQ vs. IPC

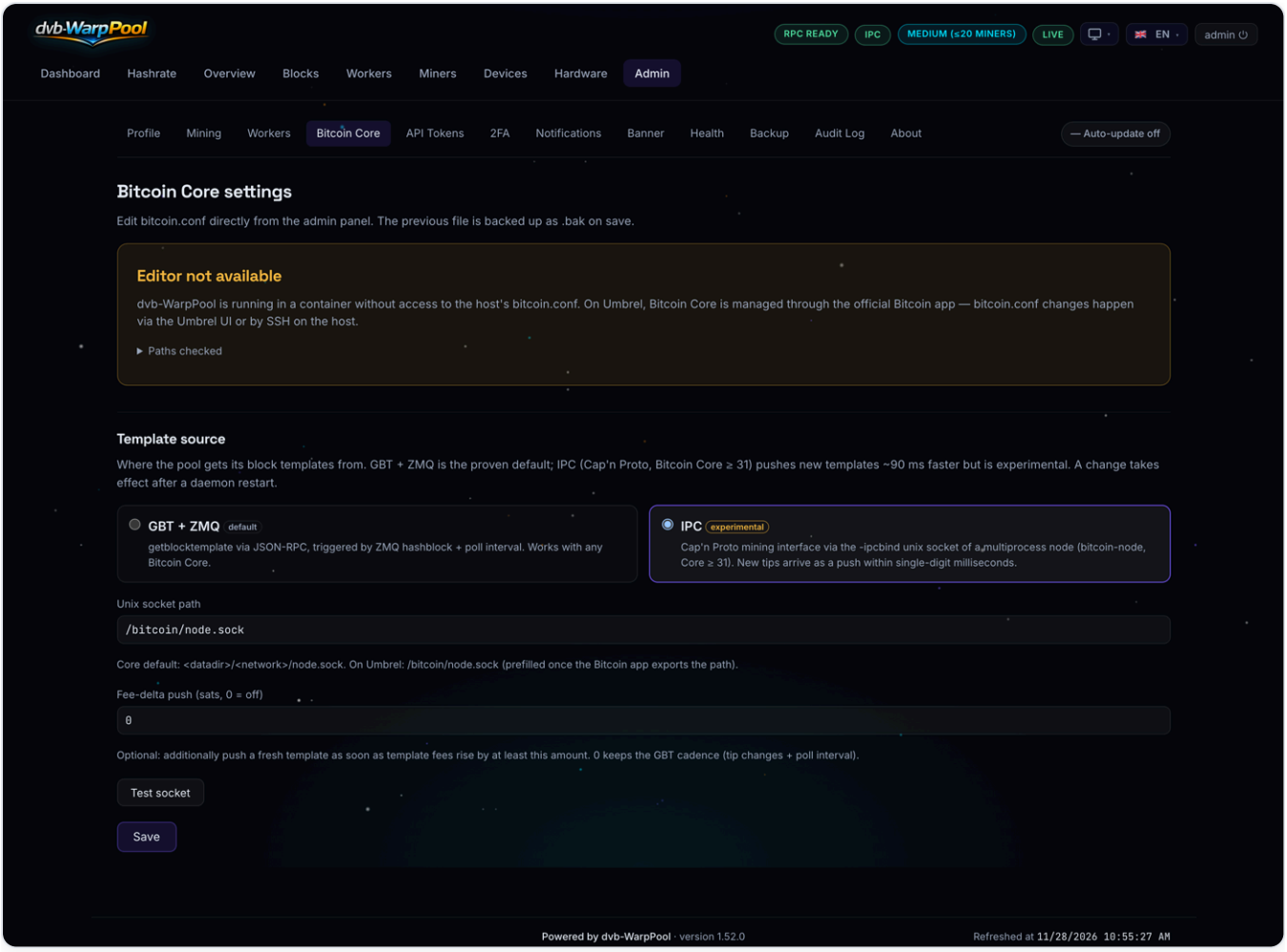
This chooses *how* the pool gets fresh block templates from your node. The page states it plainly: "GBT + ZMQ is the proven default; IPC (Cap'n Proto, Bitcoin Core ≥ 31) pushes new templates ~90 ms faster but is experimental. A change takes effect after a daemon restart."

Option	What it is & who it's for
GBT + ZMQ (badge "default")	The classic path: `getblocktemplate` over RPC plus ZMQ notifications. Works with **every** Bitcoin Core version. **For almost everyone, this is the right choice** — leave it here.
IPC (badge "experimental")	A newer, faster path: the Cap'n Proto mining interface over a Unix socket of a multiprocess node (`bitcoin-node` , **Bitcoin Core ≥ 31**). New chain tips arrive as a push in single-digit milliseconds. Opt-in and experimental.

If you switch to **IPC**, two more fields appear: a **Unix socket path** (Bitcoin Core's default is `<datadir>/<network>/node.sock`) and a **Fee-delta push** value in sats (push a fresh template when template fees rise by at least this much; 0 = off). The recommended flow is:

1. Enter the socket path.
2. Click **"Test socket"** until it reports **"✓ Connection OK — interface responds, tip height …"**. Other messages tell you exactly what's wrong (wrong path, node down, no permission on the socket, or "old schema (Core < 31) — update Bitcoin Core to v31.0").
3. Click **Save** ("Takes effect after a daemon restart").
4. Click **"↻ Restart daemon now"**. There is no hot-switch — IPC only becomes active after the restart.

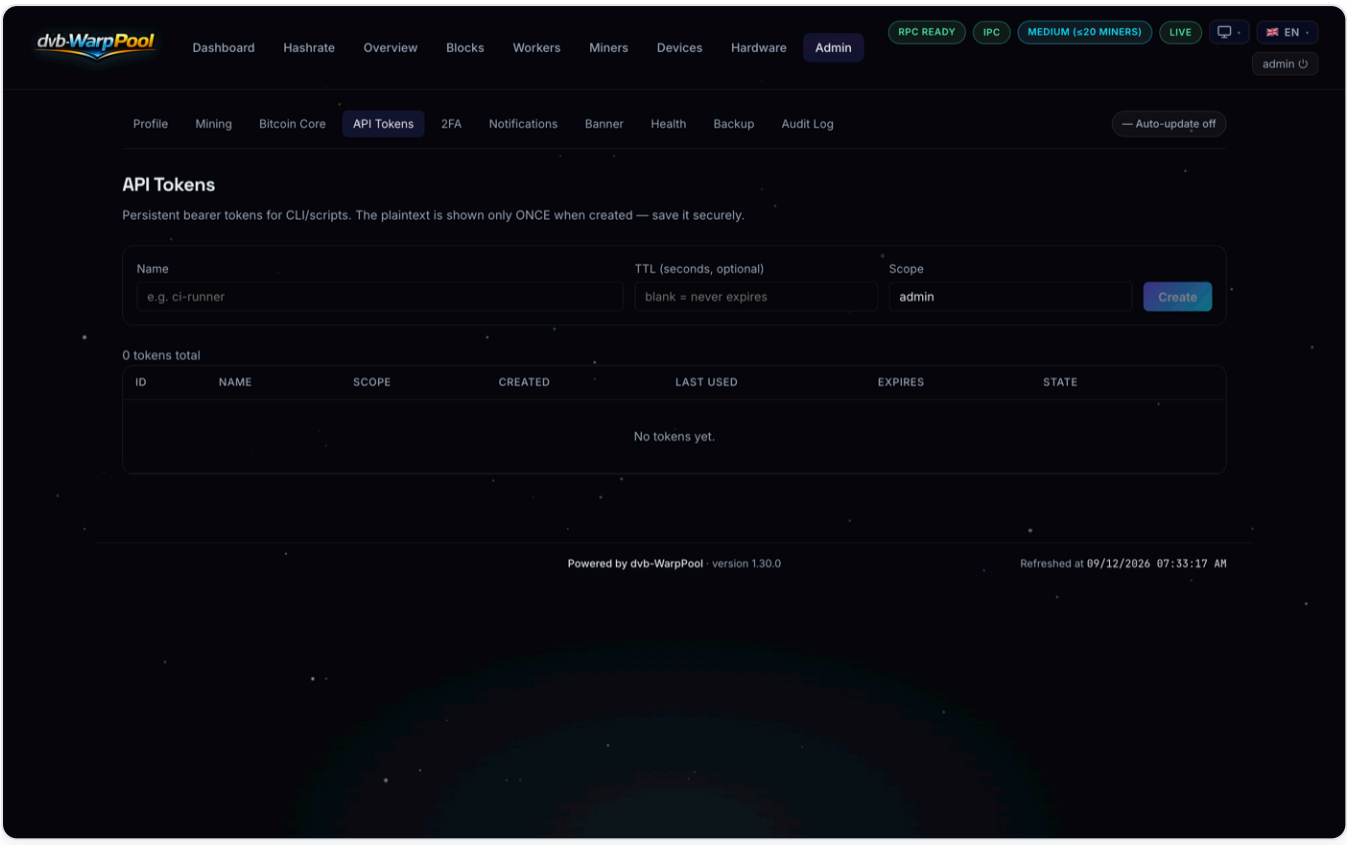
> **IPC needs a multiprocess Bitcoin Core v31 or newer.** If you're not running that, stay on GBT + ZMQ — it is fully supported and only a few milliseconds slower. IPC is a power-user optimisation, not a requirement.



Admin → Bitcoin Core: the bitcoin.conf editor above, and the “Template source” switch below — here with IPC selected, which reveals the Unix socket path and fee-delta fields.

API Tokens (Admin → API Tokens)

Bearer tokens for scripts and the CLI — the plaintext is shown **only once** when you create one, so copy it immediately. The form has **Name** (required), **TTL** (optional lifetime in seconds, blank = never expires), **Scope** (a free-text field, default `admin`), and **Create** (create). The table lists your tokens with a status (`active`, `expiring`, `revoked`) and a **Revoke** action.



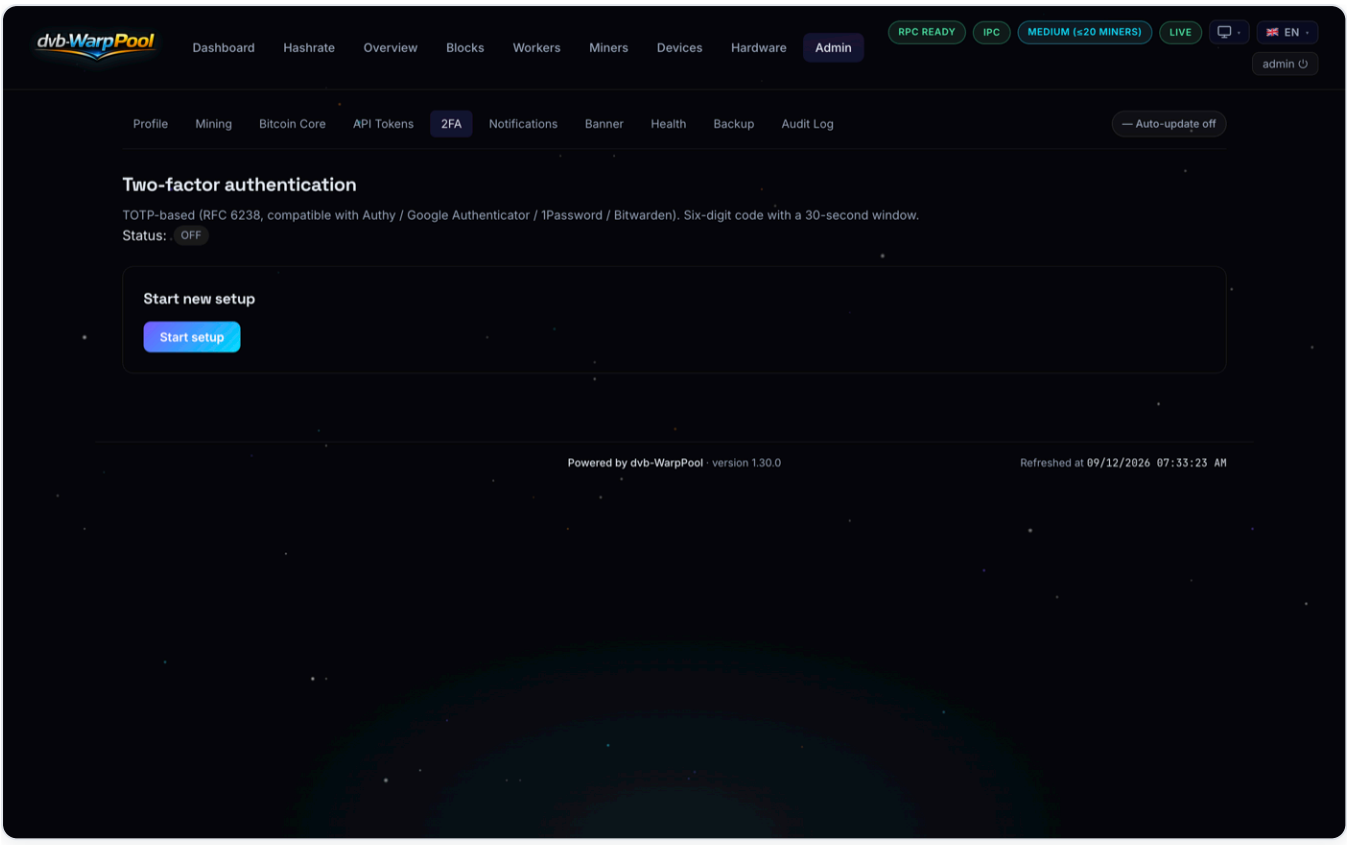
Admin → API Tokens: create bearer tokens for scripts and the CLI. The plaintext token is shown only once.

2FA (Admin → 2FA)

Two-factor authentication for the admin login, using any TOTP app (Authy, Google Authenticator, 1Password, Bitwarden). To turn it on: click **Start setup**, scan the QR code (or use the manual Base32 secret), enter the code from your app and click **Enable 2FA**. From then on the login asks for a 6-digit code. To turn it off you must enter a **valid current code**.

Recovery codes. Enabling 2FA shows **10 one-time recovery codes** — save them (copy or download). If you lose your authenticator, enter one in place of the 6-digit code at login; each works once. The 2FA page shows how many remain and can regenerate a fresh set (invalidating the old ones) with your current app code.

> **Save your recovery codes.** They are shown only once. If you lose both your authenticator and your recovery codes, 2FA can only be cleared by deleting the `admin_2fa` row from the pool database.



Admin → 2FA: turn on a TOTP second factor for the admin login. Here it is still off.

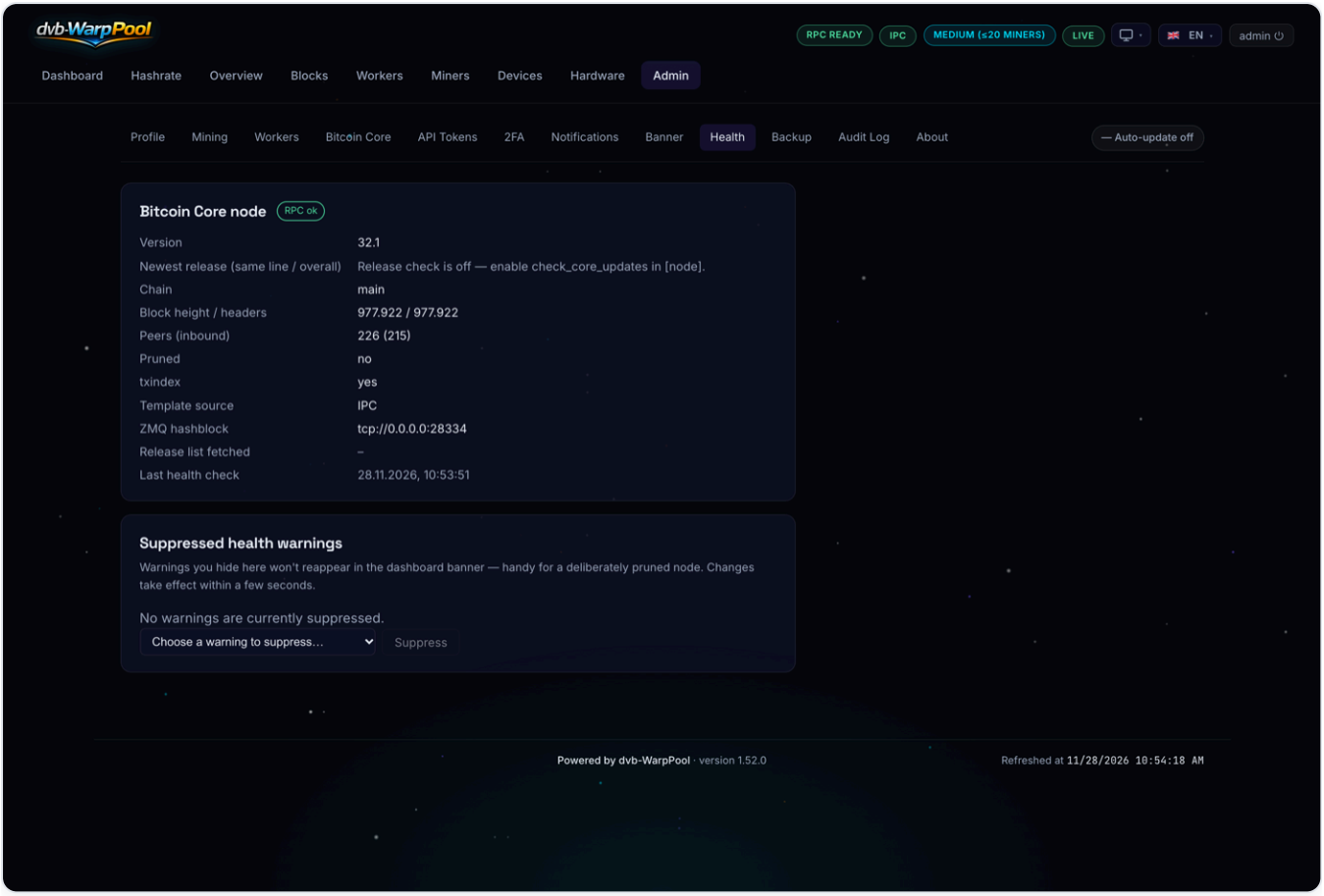
Notifications (Admin → Notifications)

Alerts for found blocks and health issues, through several channels. Because it's a whole topic of its own — and includes channels that work even when the app is closed — it has its own chapter 10.

Health (Admin → Health)

"Suppressed health warnings." Any warning you hide here won't reappear in the dashboard's health banner — useful for a deliberately pruned node. Pick a warning from the dropdown and click **Suppress**; click **Show again** to restore it.

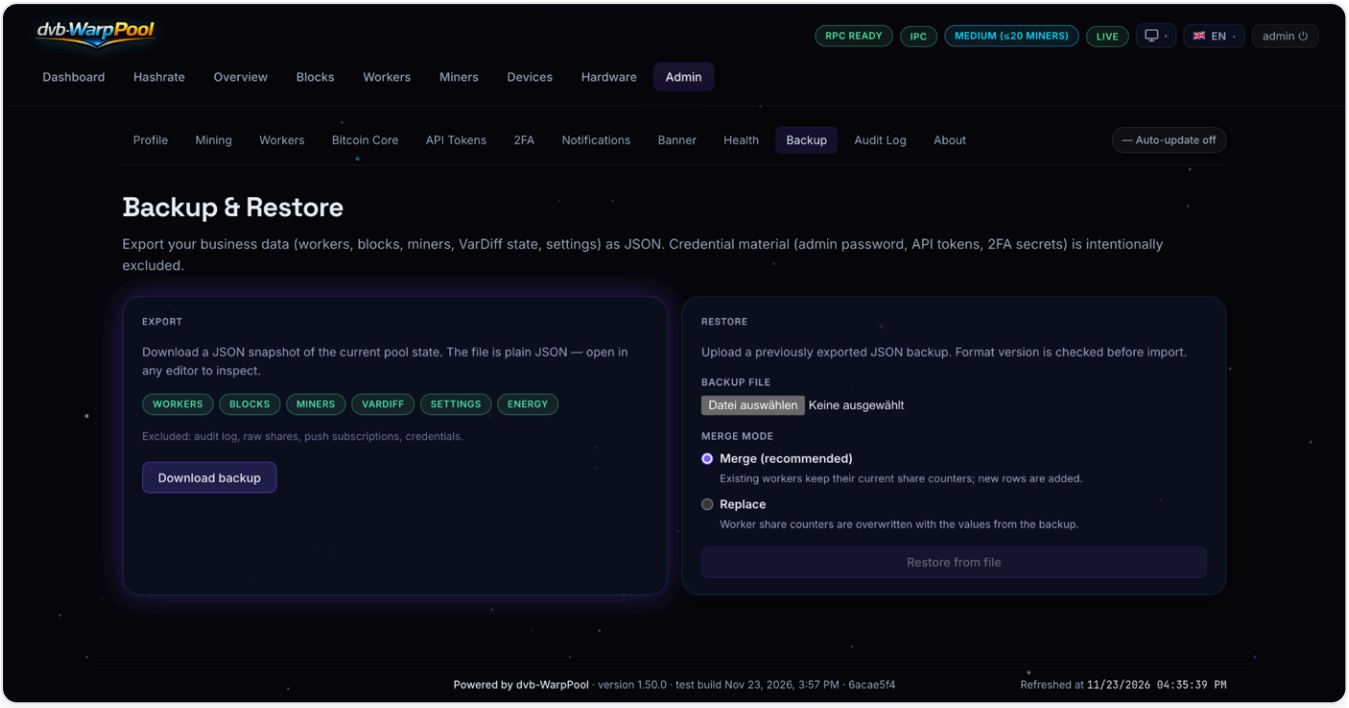
> **One warning is special.** The new IPC "template stale" warning (`ipc_template_stale`) is *not* in this dropdown. You hide it from the dashboard banner itself with "Hide permanently", after which it appears here so you can "Show again".



Admin → Health: warnings you suppress here stop appearing in the dashboard banner.

Backup (Admin → Backup)

"Backup & Restore." **Download backup** saves a JSON snapshot containing workers, blocks, miners, VarDiff, settings and energy — but **never** credentials, raw shares or the audit log. To restore, pick a file and a mode: **Merge (recommended)** keeps existing workers and adds new ones; **Replace** overwrites share counters.

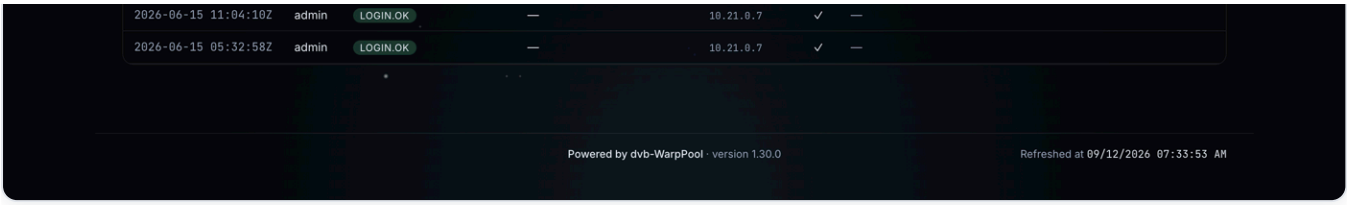


Admin → Backup: export a JSON snapshot (never credentials), restore with Merge or Replace.

Audit Log (Admin → Audit Log)

An append-only record of admin actions (login, token create/revoke, 2FA changes, profile switches), kept for 90 days by default. You can filter by **Limit** and **Actor**. It is read-only; empty it says "No audit entries yet."


dvb-WarpPool
Dashboard
Hashrate
Overview
Blocks
Workers
Miners
Devices
Hardware
Admin
RPC READY
IPC
MEDIUM (≤20 MINERS)
LIVE
EN
admin
Profile
Mining
Bitcoin Core
API Tokens
2FA
Notifications
Banner
Health
Backup
Audit Log
— Auto-update off
Audit Log
Append-only log of all admin actions (login, token create/revoke, 2FA setup/enable/disable, profile switch). Retention default 90 days.
Limit
100
Actor
optional, e.g. admin
Refresh
49 entries total — showing 49
WHEN ACTOR ACTION TARGET PEER IP OK DETAILS
2026-09-12 05:29:20Z admin LOGIN.OK — 192.168.178.10 ✓ —
2026-09-11 15:48:39Z admin ENERGY_LIFETIME.RESET — – ✓ —
2026-09-11 15:48:23Z admin LOGIN.OK — 10.21.0.4 ✓ —
2026-09-11 11:11:17Z admin TUNE.SET — – ✓ enabled=true url=http://192.168.178.10:8766 poll=30 stale=120 persisted=true
2026-09-11 11:07:35Z admin ENERGY_LIFETIME.RESET — – ✓ —
2026-09-11 08:18:31Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-09-10 12:20:46Z admin ENERGY_LIFETIME.RESET — – ✓ —
2026-09-10 12:20:22Z admin ELECTRICITY.SET — – ✓ rate=0.2744 currency=EUR persisted=true
2026-09-10 12:05:14Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-09-10 07:08:11Z admin LOGIN.OK — 10.21.0.4 ✓ —
2026-09-10 07:03:56Z admin LOGIN.OK — 10.21.0.4 ✓ —
2026-08-21 05:16:52Z admin DAEMON.RESTART — – ✓ admin-panel button
2026-08-21 05:16:40Z admin NOTIFIER.CONFIG — – ✓ ntfy=false telegram=false discord=false slack=false email=false secrets_updated=false
2026-08-21 05:15:55Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-21 05:21:09Z admin BANNER.SET — – ✓ chars=11 duration_secs=180
2026-07-21 05:20:48Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-19 07:57:23Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-16 07:54:05Z admin LOGIN.OK — 10.21.0.8 ✓ —
2026-07-13 17:31:37Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-11 17:46:53Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-11 11:30:54Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-11 05:34:47Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:37:15Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:36:55Z admin DAEMON.RESTART — – ✓ template-source switch
2026-07-10 13:36:49Z admin TEMPLATE_SOURCE.SET — – ✓ source=ipc (prev ipc) socket_set=true fee_delta=0 persisted=true
2026-07-10 13:36:48Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:36:47Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:34:48Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:30:00Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:29:23Z admin DAEMON.RESTART — – ✓ admin-panel button
2026-07-10 13:29:07Z admin TEMPLATE_SOURCE.SET — – ✓ source=ipc (prev gbt) socket_set=true fee_delta=0 persisted=true
2026-07-10 13:29:02Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=ok
2026-07-10 13:27:55Z admin TEMPLATE_SOURCE.PROBE — – ✓ socket=/bitcoin/node.sock outcome=socket_not_found
2026-07-10 08:17:16Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-07-08 08:08:14Z admin LOGIN.OK — 10.21.0.5 ✓ —
2026-07-03 09:00:35Z admin LOGIN.OK — 10.21.0.5 ✓ —
2026-07-02 18:38:35Z admin LOGIN.OK — 10.21.0.5 ✓ —
2026-06-27 10:01:36Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-06-25 09:33:40Z admin LOGIN.OK — 10.21.0.5 ✓ —
2026-06-24 12:50:31Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-06-23 15:10:04Z admin UI_LAYOUT.SET devices – ✓ order=7 collapsed=0
2026-06-23 09:37:57Z admin LOGIN.OK — 10.21.0.5 ✓ —
2026-06-20 19:32:35Z admin LOGIN.OK — 10.21.0.5 ✓ —
2026-06-19 11:41:08Z admin LOGIN.OK — 10.21.0.7 ✓ —
2026-06-17 09:04:10Z admin ELECTRICITY.SET — – ✓ rate=0.2744 currency=EUR persisted=true
2026-06-17 08:44:47Z admin GOPOOL.IMPORT /gopool-state-bak/workers.db.bak – ✓ imported=0 skipped=105 deleted=0
2026-06-17 08:44:18Z admin LOGIN.OK — 10.21.0.7 ✓ —



Admin → Audit Log: each admin action (here LOGIN.OK and AUTH.BOOTSTRAP) is recorded append-only.

Update (Admin → Update)

Shows your installed version next to the latest, with a **Check again** button and an optional changelog. On **macOS** there is a one-click **"Install now"** that downloads the DMG, verifies its SHA-256, swaps the app and relaunches it. On **Linux/Windows** it points you to the releases page instead ("1-click install is only wired up on macOS hosts"). The actual update procedures per install type are in chapter 13.

About (Admin → About)

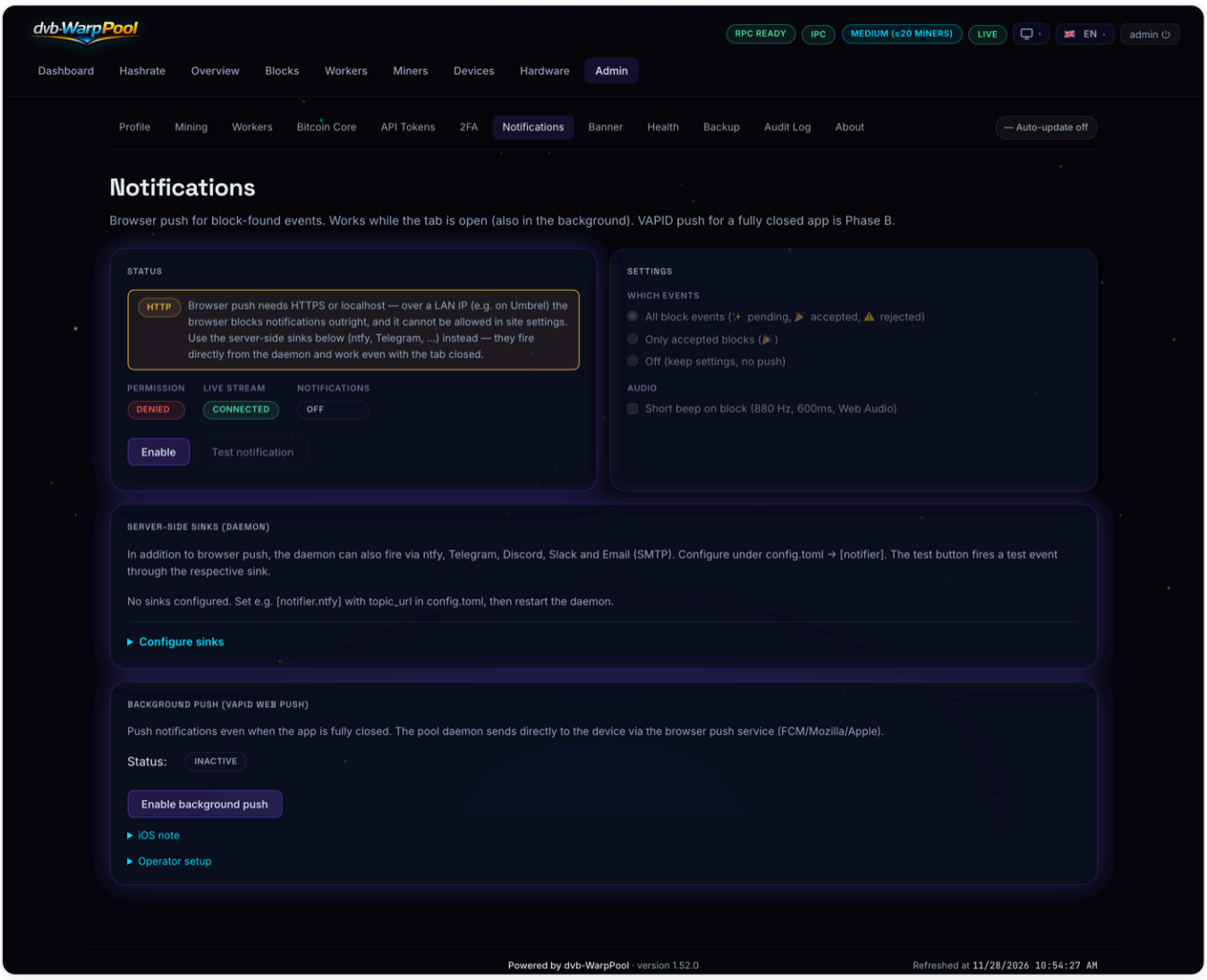
Shows the pool's version. On a test image the line adds **test build** and the commit. Below it sits the card **Support the development**: the project's Lightning address and on-chain address, each with a QR code and a **Copy** button. The addresses and QR codes are built into the pool; it fetches nothing from the network for this. Click the card's title to fold it away. Once you close it, it stays closed in this browser. A donation is voluntary: WarpPool takes no dev fee from your hashrate.

This card is not the same as **Admin → Donations**. On a public pool, that page holds the operator's own addresses, and those show on the dashboard.

10 · Setting up notifications

dvb-WarpPool can tell you the moment a block is found (or a health issue arises). The **Admin → Notifications** page organises this into four cards.

> **Two kinds of notification — this is the key distinction. Browser notifications** (the first two cards) only work while a browser tab is open on the pool, and they're blocked when you reach the pool over a plain `http://` LAN address. **Server-side sinks and background push** (the last two cards) are sent by the pool itself and arrive **even when the app is completely closed** — these are what you want for real alerting.



Admin → Notifications: its four cards are Status, Settings, Server-Side Sinks and Background Push.

Card 1 — Status (browser notifications)

Shows whether the browser has granted permission, whether the live stream is connected, and whether notifications are on. Buttons: **Enable** (ask the browser for permission), **Disable** (turn off), and **Test notification** (locked until permission is granted). Over a plain-HTTP LAN address a warning explains that browser push is blocked — use the server sinks instead.

Card 2 — Settings (what to notify)

Locked until you enable notifications. Choose which events fire — all block events (pending, accepted, rejected), only accepted blocks, or off — and whether to play a short beep (880 Hz) when a block lands.

Card 3 — Server-Side Sinks (Daemon) — the reliable ones

These are sent by the pool daemon, so they work with the app closed: **ntfy**, **Telegram**, **Discord**, **Slack** and **Email (SMTP)**. Open **Configure sinks** and fill in the channel you want:

Channel	What you provide
ntfy	A topic URL (e.g. `https://ntfy.sh/your-topic`) — the simplest option; install the ntfy app on your phone and subscribe to the same topic.
Telegram	A chat ID and a bot token (create a bot with @BotFather).
Discord / Slack	A webhook URL from your server/workspace.
Email (SMTP)	An SMTP URL and password, plus sender and recipient addresses.

Besides block-found, worker-offline, node-down and health events, the sinks carry four more since v1.45: **block-resolved** (a block that was still being resubmitted was finally accepted — or not), **miner-gate** (the pool disconnected all miners because the node delivered no templates for 10 minutes, and when it accepts them again), **miner-elsewhere** (a device from the Devices tab switched to another pool, and when it is back) and **miner-user-changed** (a device set to this pool logs in with another payout address — a hijack or a typo).

Two more watch each miner while it is connected (since v1.49): **miner-no-shares** fires when a miner stays connected but sends no shares any more — a frozen chip or stuck firmware, which a disconnect alert would never catch. It waits 10 minutes by default; for a slow miner that naturally sends shares far apart it waits longer, in proportion to that miner's own rhythm (at most 4 hours). It only counts a miner that has already sent an accepted share on its connection, and fires once per silence. You change the wait with `miner_no_shares_mins` in the `[notifier]` section of `config.toml` (in minutes; `0` switches this alert off). **miner-back** follows when such a miner — or one that raised a disconnect alert — mines here again (three accepted shares in a row), once per alert. Both go to the sinks that receive the worker-offline alerts.

Save with **Save sink configuration**. Use the per-sink **Test** buttons (or **Test all sinks**) to confirm delivery. **Saving sinks needs a daemon restart to take effect.**

Card 4 — Background Push (VAPID Web Push)

Web-push notifications that arrive even with the app fully closed. Buttons **Enable background push** / **Disable**. This requires the operator to have configured VAPID keys (via the CLI), and on iOS you must add the pool to your home screen as a PWA first (iOS 16.4+). An expandable note explains both.

> **Simplest reliable setup:** use **ntfy**. Pick a hard- to-guess topic, enter its URL as an ntfy sink, save, restart the daemon, and subscribe to the same topic in the free ntfy phone app. You'll get a push the instant a block is found — no open browser required.

11 · TLS and Stratum V2

Two optional, more advanced ways for miners to connect. Neither is required — plain Stratum on port `3333` is perfectly fine for a home LAN. For miners that reach the pool over the internet, use one of them where the firmware allows: an unencrypted connection can be rerouted to someone else's server on the way.

TLS (encrypted Stratum V1, port 3334)

TLS encrypts the connection between miner and pool. When it's enabled, the Connect panel shows a **Stratum V1 (TLS)** line (`stratum+ssl://…`) and, with the pool's own self-signed certificate, a **"⬇ Download certificate (PEM)"** button; TLS-connected miners get a 🔒 icon on the Miners tab. With a certificate from a public authority (e.g. Let's Encrypt) firmware checks it with its built-in CA store and needs no extra file; use the hostname, not the IP.

> **The default certificate is self-signed.** That means:
>
> - Firmware with a **"TLS Custom CA"** option works — upload the downloaded PEM file *and* use the exact hostname shown (not the raw IP address).
> - Firmware that lets you **pin the certificate by its fingerprint** works too: **WarpAxe 0.1.41 and later** shows the fingerprint of the key the pool presents and asks you to confirm it. Compare it with the **TLS key fingerprint (SHA-256)** line in the Connect panel; only confirm if the two match exactly. From then on the miner accepts only that key; the host name is not checked, so the pool's IP address works as well.
> - Firmware that only trusts a fixed, bundled set of CAs (for example **BitForge Nano v1.5** or **WarpAxe v0.1.40**) can *never* validate a self-signed cert — use the plain port `3333` for those, or update a WarpAxe to 0.1.41 or later, which pins by fingerprint.

Stratum V2 (NOISE, port 34254)

Stratum V2 is a modern protocol with built-in encryption (the "NOISE" handshake). When enabled, the Connect panel shows a **Stratum V2 (NOISE)** line (`<host>:34254`) and, if configured, the **Sv2 authority public key** in Base58 — some firmware asks for this to authenticate the pool. Sv2-connected miners show a ⚡ icon on the Miners tab. Use this only if your firmware explicitly supports Stratum V2; otherwise stay on plain V1.

Standard or extended channel? This is a real setting, not something the firmware decides for you: in AxeOS it appears as *SV2 Channel Type* once the pool's protocol is set to V2 — which is why you won't see it while the pool is still on V1. **For a pool you don't run yourself, pick extended.** On an extended channel the pool hands over the coinbase halves and the merkle path, so your miner can check for itself what it is hashing and that the reward output is the one you configured; on a standard channel it receives a finished merkle root and has to take the pool's word for it. AxeOS gives the same advice in its own tooltip — extended for external pools, standard only with an Sv2 node you deploy yourself. Some hardware offers only one of the two: a Bitaxe Max (BM1397) cannot use standard channels at all, and NerdQAxe firmware currently opens an extended channel regardless of the setting. Extended does cost bigger jobs and a little merkle work per job on the device, which is the honest argument for the other side. This pool serves both kinds and needs no configuration for either.

> **Not sure which to pick?** Start on plain `3333` . Move to TLS only if you route mining traffic across an untrusted network, and to Sv2 only if your firmware advertises it.

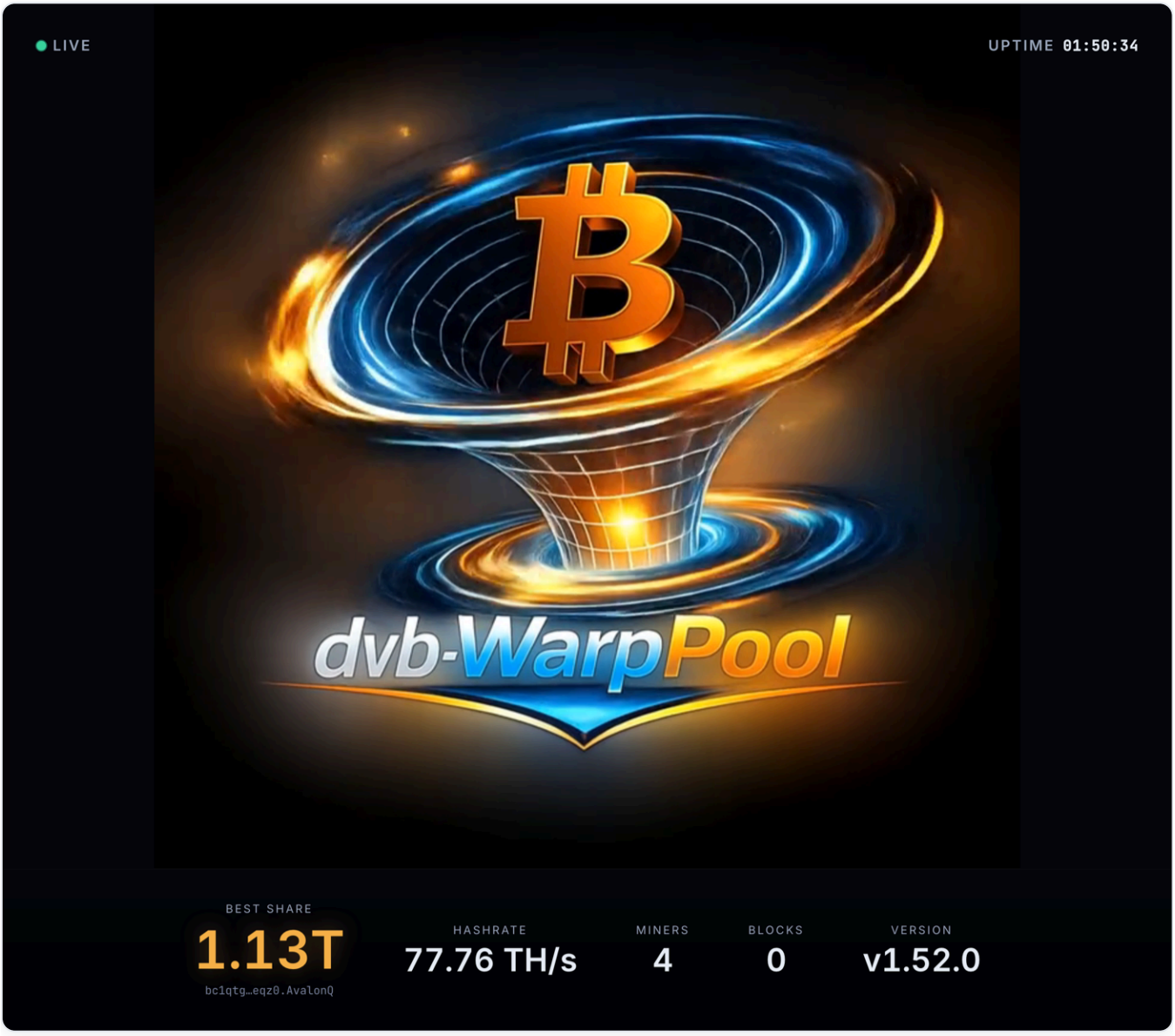
12 · Kiosk / screensaver mode

dvb-WarpPool has a built-in full-screen display mode — perfect for a wall monitor or a spare tablet showing your pool at a glance.

Open the **Display** menu (the monitor icon in the header). It offers:

- **Screensaver** — on/off (off by default). "Fullscreen display when idle."
- **Starts after** — 5, 10, 15 or 30 minutes of no interaction.
- **Show statistics** — on by default.

After the idle time, the screen goes full-screen with a looping video background, a "Live" badge, uptime, and a stat bar (best share, hashrate, miners, blocks and version). **Any key press or tap exits** and returns you to the normal interface.



Kiosk / screensaver mode: a full-screen live display with a statistics bar, ideal for a wall monitor.

It's a per-device setting. Like language and your card layout, the screensaver is stored in *this* browser only — set it up on each device you want to use as a display. You can preview it immediately by adding `?screensaver=1` to the URL. If the device has "reduce motion" enabled, a static poster image is shown instead of the video.

13 · Updating the app

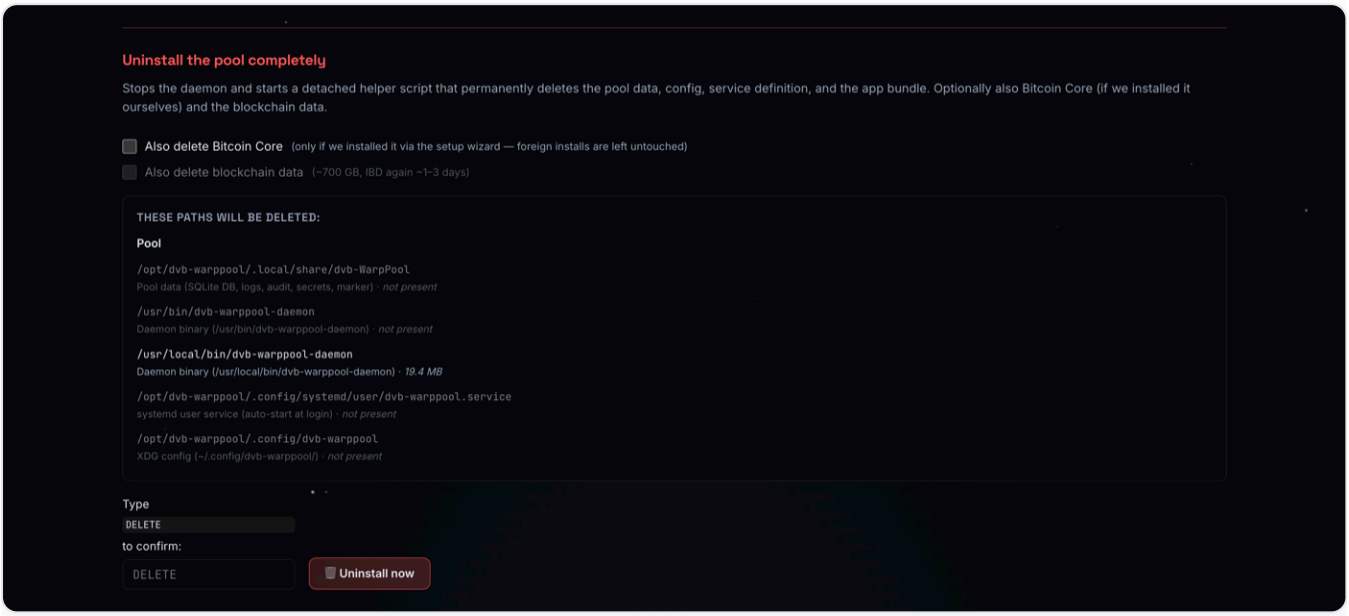
How you update depends on how you installed:

- **Docker** — pull the new image and recreate the container:
  `docker pull git.warppool.org/dvb-projekt/dvb-warppool:latest`
  `docker stop warppool && docker rm warppool` then run it again with the same `-v ~/.warppool:/data -v ~/.warppool/config:/config`
- **Native package** — install the new `.deb` / `.rpm` over the old one and restart the service.
- **macOS app** — use the one-click updater on **Admin** → **Update**: it downloads the DMG, verifies its SHA-256, replaces the app and relaunches it. Afterwards do a hard reload (`⌘⇧R`).
- **A specific version or a rollback** — from the CLI: `dvb-warppool-cli download-update --tag v1.12.1`.

In every case your **configuration, database and statistics are preserved** (they live in the data volume/directory), and miners reconnect automatically after the short restart. A brief flurry of reconnect messages right afterwards is normal.

14 · Uninstalling

You can remove dvb-WarpPool from the app's own **Admin** → **Profile** → **Uninstall** section, or from the host (`docker rm -f warppool` for Docker, or `sudo apt remove dvb-warppool` for a native install).



Uninstalling shows exactly which paths will be removed and asks you to type DELETE.

The in-app uninstaller is deliberate and explicit. It offers two extra checkboxes — **"Also delete Bitcoin Core"** (only if the wizard installed it) and **"Also delete blockchain data"** (~700 GB, only after the first is ticked) — and previews the exact paths that will be removed. To confirm, you must type the word `DELETE` exactly into the field, then click "🗑 **Uninstall now**".

> **Uninstalling deletes the pool's data** (statistics, configuration, database). Your Bitcoin address and any coins already received by the network are of course unaffected — they live in your wallet, not in the pool. If you want to keep your statistics, take a backup first (chapter 9).

15 · Troubleshooting & FAQ

A block stays "pending" / what is the block-spool folder?

A found block that Bitcoin Core could not judge right away (node restarting, unreachable, undecided) is kept as a file in `block-spool/` inside the data directory and resubmitted on its own until a node accepts it, one rejects it for real, or the chain has moved on; resolved files move to `block-spool/resolved/` with the verdict in the name and are never deleted. You do not have to do anything. To hand such a block to any node by hand: `bitcoin-cli submitblock "$(jq -r .block_hex block-spool/<file>.json)"` — the node answers `null` (accepted), `duplicate` (it has it) or the reject word. The Admin → Health page and the Network card show pending blocks; `dvb-warppool-cli block-spool` lists them.

All miners disconnected — "node unhealthy"

When Bitcoin Core delivers no block template for 10 minutes (an update, a crash, a reindex), the pool disconnects every miner and refuses new connections so that the miners mine on their **fallback pool** instead of on a stale job. The moment templates flow again the doors open and the miners return on their own (AxeOS within a minute, NerdOS within seconds, WarpAxe within five minutes). Give every miner a fallback pool — a miner without one sits idle meanwhile. The grace period is `[server] node_unhealthy_grace_secs` (default 600); `node_unhealthy_disconnect = false` switches the behaviour off.

My miner won't connect

- Double-check the host address (your pool host's IP or hostname) and port `3333`.
- Make sure the worker/user field is your **Bitcoin address**, not a username.
- Confirm your miner and your pool host are on the same network.
- If your firmware is set to Stratum V2, either switch it to V1 on port `3333` or use the Sv2 port `34254`. If it's set to TLS but can't validate a self-signed certificate, use plain `3333` (chapter 11).

The pool shows no hashrate

- Give a new miner a minute or two to submit its first share.
- Very small miners submit rarely — the number will rise and fall.
- Check the miner's own screen: is it actually hashing and accepted?

"Bitcoin node not ready" or sync warnings

- Make sure Bitcoin Core is running and fully synced to 100 %.
- Check that `server=1`, the ZMQ lines and the RPC credentials are set (see chapter 2), then restart Bitcoin Core.
- The pool builds templates only once the node is synced and reachable.

I switched to IPC and templates went stale

- IPC needs a multiprocess **Bitcoin Core ≥ 31**. If the "Test socket" button reports an old schema, update Bitcoin Core, or switch back to **GBT + ZMQ** on Admin → Bitcoin Core.
- Remember the change only takes effect after **"Restart daemon now"**.

Workers, Miners, Devices — which is which?

See the box at the start of chapter 7. **Workers** lists wallet addresses, **Miners** is your read-only list of Stratum logins, and **Devices** is the interactive device manager. Note that the dashboard's "All workers →" link opens **Miners**.

A tab is missing when I'm logged out

The Devices tab, Hardware tab and Energy card can be hidden from anonymous visitors. Log in, or turn their visibility toggles back on under Admin → Profile.

The "Live" indicator flickers

The small Live/Offline pill reflects the browser's live connection to the app. A brief flicker is cosmetic and does not affect mining — your miners stay connected and your shares keep counting.

When will I find a block?

Solo mining is probabilistic. Expected time to a block scales with the whole network's hashrate versus yours, so for small setups it can be very long — but every share has a real, non-zero chance, and the full reward is yours when it lands.

Are my rewards safe?

Yes. The pool never holds coins. A found block pays the reward directly to the address you configured, via the Bitcoin network. The pool only builds the work and broadcasts the solved block.

16 · Support & links

Documentation	docs.warppool.org
Source & issues	git.warppool.org/dvb-projekt/dvb-WarpPool
Feature comparison	docs.warppool.org/comparison.html
Downloads	git.warppool.org/dvb-projekt/dvb-WarpPool/releases · Docker: `git.warppool.org/dvb-projekt/dvb-warppool`
Contact	dvbprojekt@gmx.de

dvb-WarpPool is free and open-source software (AGPL-3.0-or-later, with a commercial licence available). This manual describes Version 1.52.0. Screens may differ slightly between releases. Mining is inherently probabilistic; nothing here is a promise of reward. Always keep control of your own Bitcoin keys.



Happy mining — and may your best share be a block.