

# Why Run a Bitcoin Node?

## 1. Trustless Verification

- Verify every transaction and block **yourself**
- **No need to trust** third-party servers or explorers
- Ensures **rules are followed**: correct supply, valid signatures, no inflation

## 2. Strengthen Network Decentralization

- Your node adds to Bitcoin's **resilience & independence**
- More nodes = **harder to censor, attack, or control**
- **No central authority** – every node counts

## 3. Take Control of Your Privacy

- Wallets can connect to **your own node**
- **No data sharing** with external servers
- Avoid surveillance and **leakage of addresses or balances**

## 4. Enforce Consensus Rules

- Confirms block size, difficulty, and protocol rules
- Helps **defend Bitcoin's core principles**
- Prevents manipulation or soft forks imposed by others

## 5. Relay & Broadcast Transactions

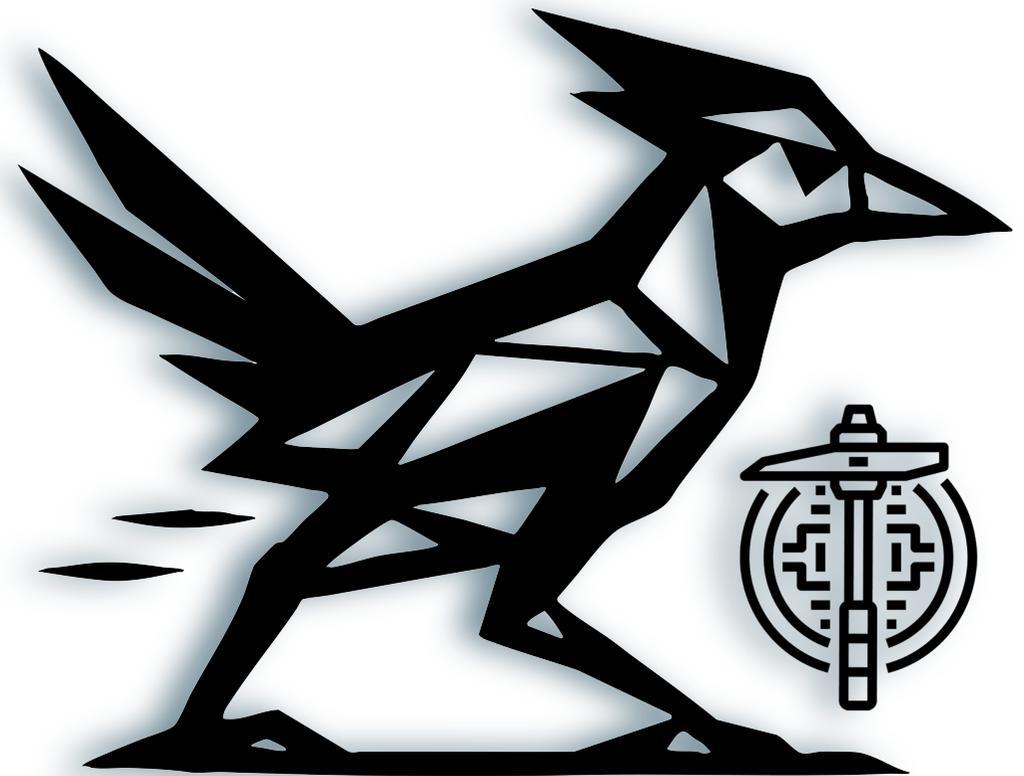
- Send your transactions **directly to the network**
- Help relay others' transactions & blocks
- **Supports the ecosystem's speed and stability**

## 6. Enable Solo Mining

- Connect your ASIC or USB miner directly to **your own node**
- No pools—if **you find a block, it's all yours**
- **True sovereignty**: mine for yourself, by yourself



**THE SOLO MINING CO'**  
YOUR RIGS. YOUR REWARDS.



**REBEL NODERUNNERS**  
**YOUR RIGS. YOUR RULES.**

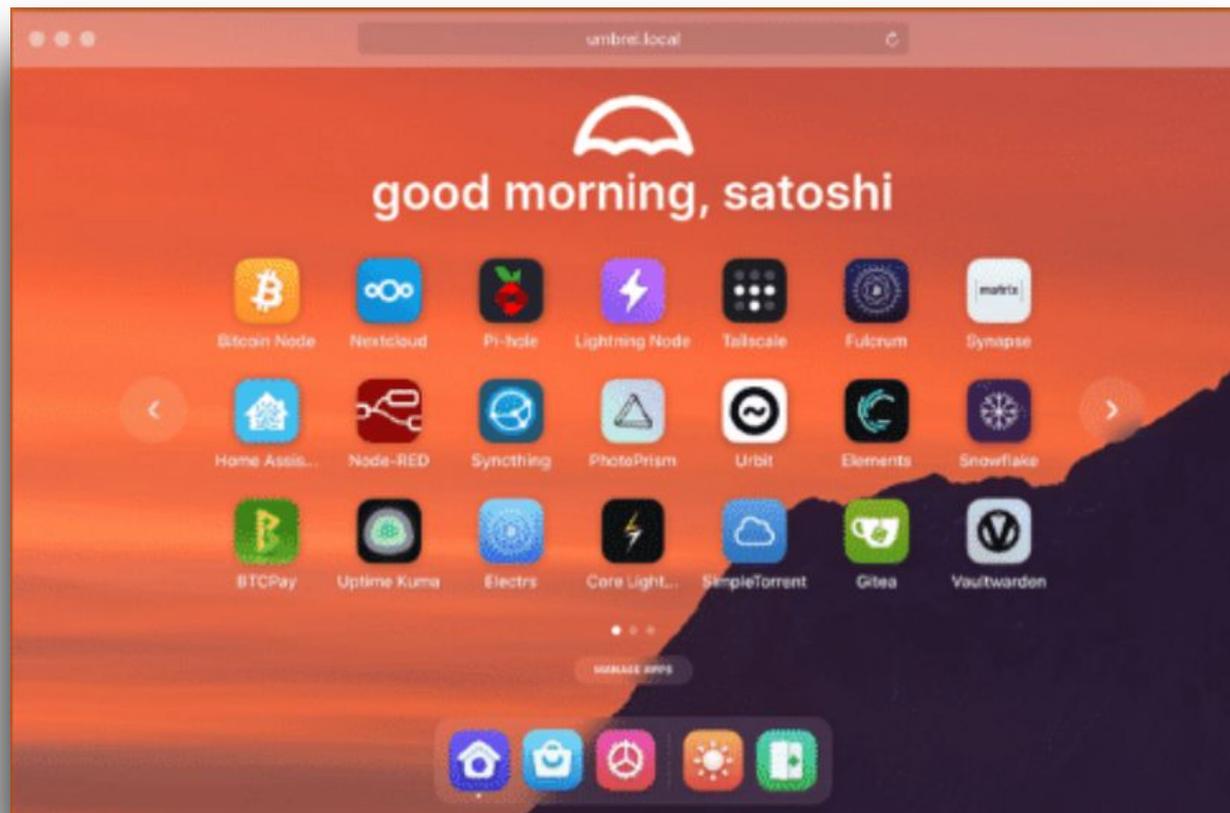
**Your Self-Hosted**  
**Your Self-Hosted Bitcoin Miner**  
**Your Private Keys**

**This is Self-Sovereignty.**

## What is Umbrel?

Umbrel makes running a Bitcoin and Lightning node effortless, with a clean interface and one-click installs. It gives you full sovereignty over your funds, privacy, and data—no third parties, no compromises. Ideal for Bitcoiners who want to verify, transact, and build on Bitcoin from home.

## Rebel NodeRunners Your Rigs. Your Rules.



# What is Umbrel? - (The Details)

**Umbrel** is a user-friendly operating system designed to transform devices like Raspberry Pi, x86 PCs, or Umbrel's own hardware into personal servers. It enables users to self-host a variety of applications, offering an alternative to traditional cloud services and enhancing digital sovereignty.

## Key Features

- **Self-Hosting Made Simple:** Umbrel provides a sleek web-based interface that allows users to install and manage applications with a single click, eliminating the need for complex command-line operations.
- **Diverse App Ecosystem:** Through the Umbrel App Store, users can access a wide range of applications, including:
  - **Productivity:** Nextcloud (file storage), Vaultwarden (password management), Immich (photo backup)
  - **Media:** Jellyfin and Plex (media streaming)
  - **Networking:** Pi-hole (ad blocking), Tailscale (VPN)
  - **Automation:** Home Assistant (home automation)
  - **Bitcoin & Lightning:** Bitcoin Core, Lightning Network nodes, Mempool explorer, BTCPay Server
- **Privacy and Control:** By self-hosting applications, users retain full control over their data, reducing reliance on third-party cloud providers.
- **Tor Integration:** Umbrel includes built-in Tor support, allowing secure remote access to services without the need for port forwarding or exposing IP addresses.
- 

## Bitcoin and Lightning Network Support

Originally developed to simplify running a Bitcoin node, Umbrel has expanded its capabilities to support the Lightning Network and related tools. Users can

- **Run a Full Bitcoin Node:** Maintain a complete copy of the Bitcoin blockchain, enhancing network decentralization and personal verification of transactions.
- **Operate a Lightning Node:** Facilitate fast and low-cost Bitcoin transactions through the Lightning Network.
- **Utilize Bitcoin Tools:** Access applications like Mempool for transaction tracking and BTCPay Server for accepting Bitcoin payments

# Enough Talk. Let's Get to Work!

To install Umbrel with this guide, you'll need an Intel-based Mini PC as supplied by The Solo Mining Co, equipped with at least a 1 TB SSD (2 TB recommended) for optimal Bitcoin node performance.

## Minimum Hardware Requirements

- **CPU:** Dual-core 64-bit Intel or AMD processor (Quad-core+ recommended)
- **RAM:** 4 GB minimum (8 GB+ recommended for running multiple apps)
- **Storage:** 32 GB minimum for UmbrelOS; 1 TB+ SSD recommended for Bitcoin Core
- **Boot Medium:** USB flash drive (4 GB or larger)
- **Network:** Ethernet connection preferred for stable syncing

## Basic Hardware Setup

- **Display, Keyboard & Mouse:**  
Required during installation to interact with the UmbrelOS setup interface. You'll use these to select disks, configure network, and finalize setup.
- **Ethernet Connection:**  
Strongly recommended for speed and reliability. While Wi-Fi is supported (with wifi equipped hardware), it can slow down or disrupt the sync process.

## Internet Requirements

### **Active Internet Connection:**

Needed to download UmbrelOS, install apps, and sync the Bitcoin blockchain.

- **Unmetered Data Plan (Recommended):**  
The Bitcoin blockchain is **550+ GB** and growing daily.  
Initial sync may take several days and use large amounts of data. Avoid metered plans or data caps.

## Heads-Up Before You Begin

- **Be Patient:**  
The initial blockchain sync is resource-intensive but only needs to be done once. It may take a few days.

## Step 1: Prepare a Bootable USB Stick

### 1. Download umbrelOS USB Installer

Get the latest version of `umbrel-os-amd64-usb-installer.iso` from <https://github.com/getumbrel/umbrel/wiki/Install-umbrelOS-on-x86-Systems>

### 2. Install Balena Etcher

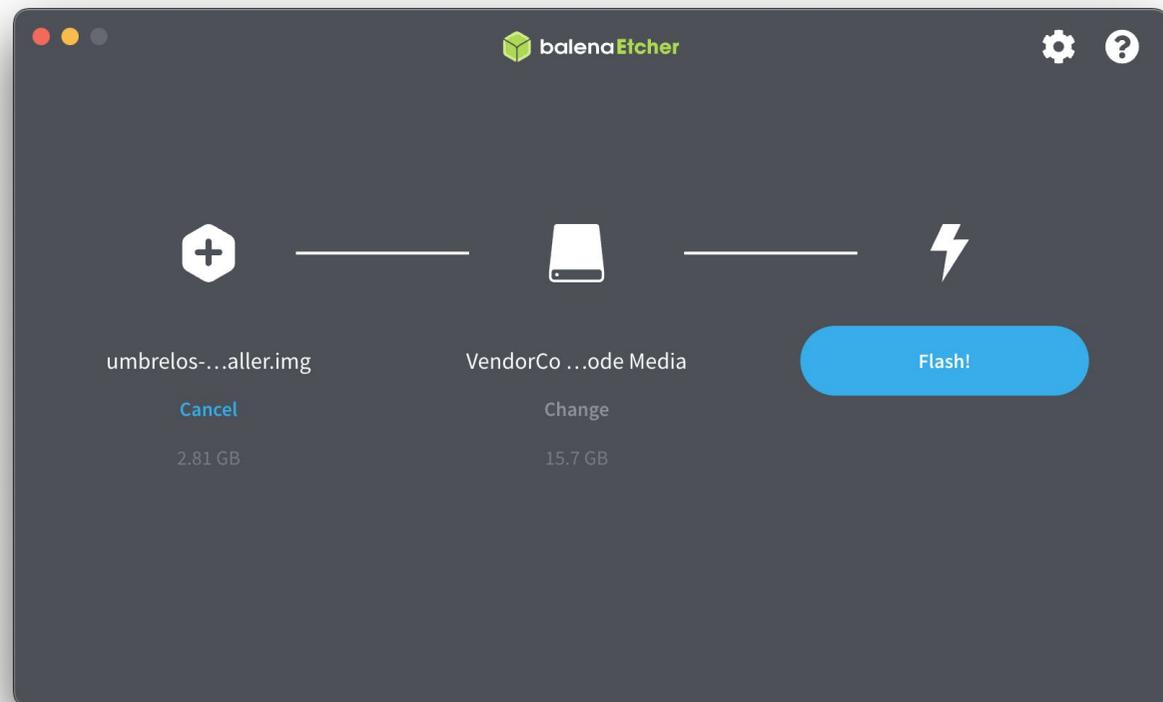
Download from [balena.io/etcher](https://etcher.balena.io/#download-etcher) and install it on your computer. Direct link: <https://etcher.balena.io/#download-etcher>

### 3. Insert USB Stick (4 GB or Larger)

Plug in a USB drive. ⚠️ **Backup any important files — this drive will be erased.**

### 4. Flash the Installer

- Launch Balena Etcher
- Select the `.iso` file
- Choose your USB stick
- Click **Flash**





## Step 3: Complete Setup

### 1. Follow the On-Screen Prompts

- Select your **internal SSD** as the target drive for installation.
- Confirm any formatting warnings — this will erase the drive and install UmbrelOS.

### 2. Automatic Reboot

Once installation completes, your Mini PC will automatically **reboot into UmbrelOS** running from the internal SSD.

**Note:** You may be asked to remove the USB stick prior to reboot. Do so if requested.

---

### Troubleshooting Tips

#### If Umbrel doesn't boot after install:

On some Dell machines, you may need to **turn off Legacy Boot mode in the BIOS** *after installation* for UmbrelOS to boot from the SSD.

Go to BIOS → Boot Options → Disable Legacy Mode → Enable UEFI Boot (menu may differ but this is the outline instruction).

## First Boot

### 1. Initial Boot Time (~5 Minutes)

After installation, UmbrelOS will boot for the first time. This process can take **up to 5 minutes** — be patient and **do not power off** the device.

### 2. Network Detection

Umbrel will automatically detect your **Ethernet connection** and prepare the system for web access.

### 3. Access Umbrel on Your Network

Once ready, the screen connected to your Mini PC will display a local access address, such as:

- <http://umbrel.local>
- or something like <http://192.168.1.42>

### 4. From Another Device

On any other device connected to the **same network** (e.g., phone, tablet, or laptop):

- Open a web browser
- Type in the address shown (e.g. <http://umbrel.local>)
- Begin the Umbrel onboarding process.

**NOTE: Remember your password!**

# The Umbrel User Interface

Once you are past the “Set your username and password” page, you will be greeted with something very similar to this.

Now, install some apps and get playing!

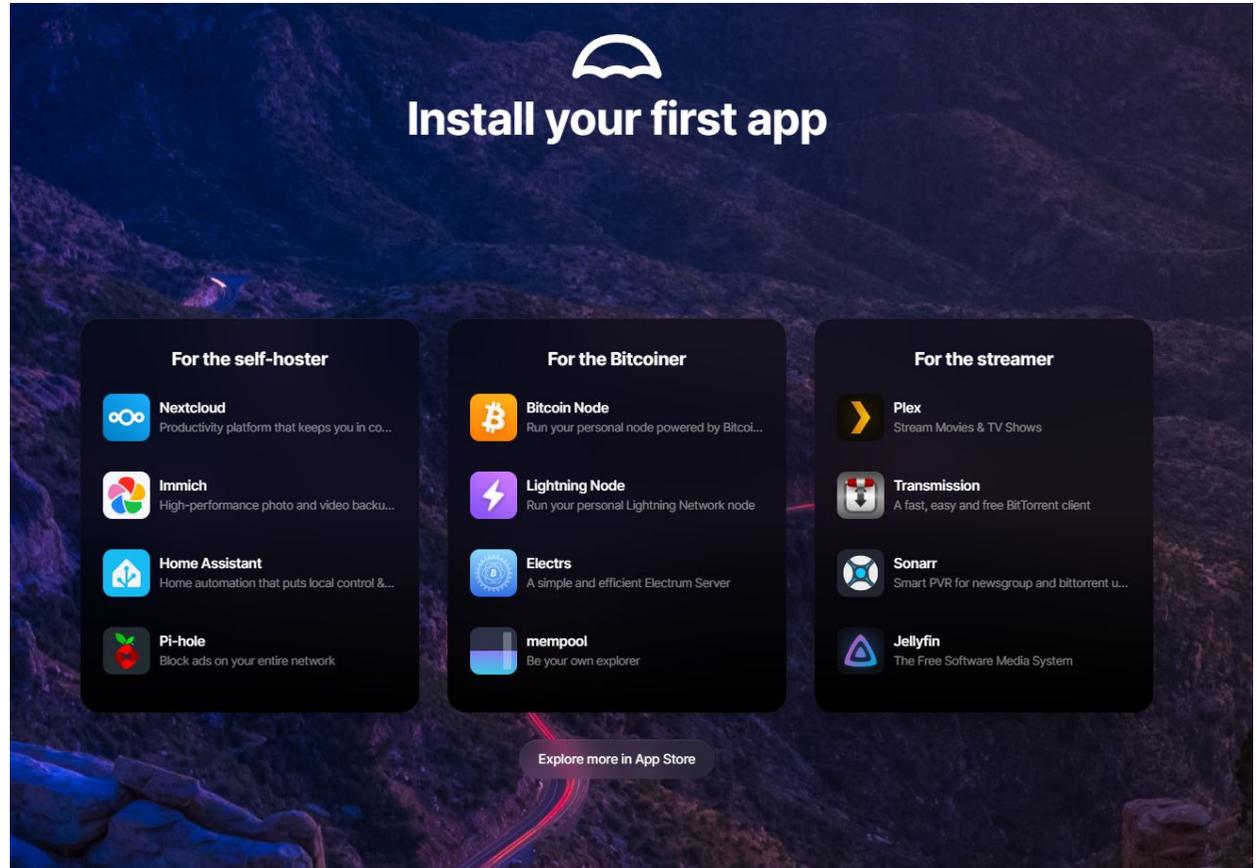
**Bitcoin Core** – Runs a full Bitcoin node to verify all transactions and blocks independently.

**Public Pool** – A solo mining Stratum server app on Umbrel that lets you mine Bitcoin directly to your own node without third-party pools.

**Lightning Node (LND)** – Enables fast, low-fee Bitcoin transactions using the Lightning Network.

**Mempool** – Visual explorer for Bitcoin blocks, mempool activity, and real-time fee estimates.

**BTCPay Server** – Accept Bitcoin and Lightning payments with your own self-hosted gateway.



## Next Steps to Solo Mining with Umbrel



**THE SOLO MINING CO'**  
YOUR RIGS. YOUR REWARDS.

### 1 Sync the Blockchain

- Open the **Umbrel App Store**
- Install the **Bitcoin** app (this runs a full Bitcoin node)
- Let it fully **sync the blockchain** (can take several days and ~550+ GB of storage)
  - 🔍 **Tip: Your node must be fully synced before mining can begin.**

### 2 Install Public Pool

- In the Umbrel App Store, install the **Public Pool** app
- This app creates a **Stratum server** for your miners to connect to

### 3 Find Your Stratum Address

- Open the Public Pool dashboard
- You'll see a **Stratum URL** like `umbrel.local:2018` or `192.168.X.X:2018`
- This is the address your miners will connect to

### 4 Configure Your Miner (e.g., Bitaxe)

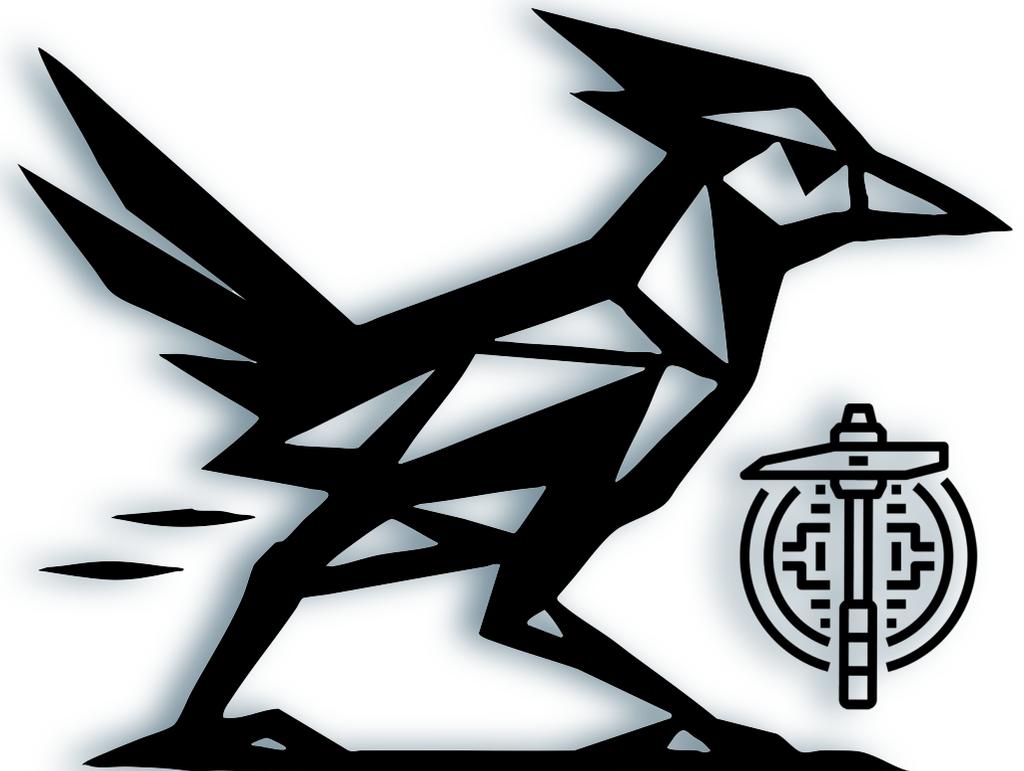
- In your miner's config, set:
  - **Stratum server:** your Public Pool URL
  - **Username:** your **Bitcoin address** (where rewards will be sent)
  - **Password:** leave blank or use "x"

### 5 Power On and Start Mining

- Turn on your miner
- It will connect to your node and begin submitting shares
- Monitor your miner and pool activity in the **Public Pool dashboard**

### You're Now Solo Mining!

- If your miner finds a block, **you keep 100% of the reward**
- No pool fees, no censorship — just you and the Bitcoin network



**REBEL NODERUNNERS**  
**YOUR RIGS. YOUR RULES.**