

# BigBrotr

## Global Observability Infrastructure for the Nostr Protocol

Scientific Breakthroughs — Nonprofit Track

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# Mission




BigBrotr is an **open-source, community-driven infrastructure** that observes, archives, and analyzes the Nostr protocol, a decentralized, censorship-resistant communication network.

It acts as a **black box recorder** for Nostr, continuously capturing and verifying every public event across clearnet and Tor relays — turning a dynamic global network into measurable, open data.

# Why It Matters

Decentralized systems like Nostr are the foundation of digital freedom — but lack scientific visibility.

## **BigBrotr provides empirical observability:**

-  Detects network bottlenecks and censorship
-  Maps information propagation and redundancy
-  Enables reproducible, verifiable research

# Scientific Breakthrough

BigBrotr combines **cryptography, data science, and distributed systems** to study decentralized communication with unprecedented rigor.

## It enables:



Relay uptime and behavior analysis



Information redundancy and resilience mapping



Network topology reconstruction



Spam and Sybil detection

# Architecture Overview



Synchronizer: Real-time collection & validation



Finder: Autonomous relay discovery



Monitor: Health, latency, and protocol compliance



Tor Proxy: Full .onion network coverage







Database: PostgreSQL with provenance tracking

Built in **Python**, modularized with **Docker**, and fully **MIT-licensed**.

# Bitcoin Alignment

BigBrotr embodies Bitcoin's principles:

-  **Transparency:** Fully auditable data
-  **Decentralization:** No central control
-  **Censorship resistance:** Full Tor integration
-  **Reproducibility:** Verifiable results

**By studying how Nostr behaves, BigBrotr strengthens Bitcoin's broader communication layer.**

# Open Science and Privacy

100 100% open source (MIT)

100 100% open data (ODbL)

🔑 Only processes **public, signed events**

🚫 Zero private or personal data collection

**Transparency and privacy can coexist — through cryptographic verification and open data ethics.**

# Future Roadmap



Public dashboards and relay explorers



Live APIs for developers and researchers



Prometheus & Grafana integrations



Long-term Nostr datasets



Nostr-native DVM for real-time stats



# Why CypherTank

CypherTank represents the convergence of **open innovation** and **Bitcoin ethos**.

BigBrotr contributes a new **scientific layer of transparency** — a foundation for the decentralized web.

**By joining CypherTank, we bring verifiable insight and open infrastructure to the heart of Bitcoin's communication layer.**

# Thank You

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**Building Transparency for the Decentralized Web**