Relay Project Vision (Updated)

Overview

Relay is a decentralized, Git-driven web platform enabling interactive browsing, safe contribution, AI-assisted management, and decentralized hosting through a network of master peer nodes.

Interactive Branch-Based Browsing

- Main branch shows the authoritative deployed site.
- Users can switch to other branches (e.g., development, staging) for broader access.
- Public branches allow anonymous contributions.
- Pull/merge requests synchronize differences between branches.

Decentralization

- Every master peer contains a full copy of every branch.
- Edits synchronize across the network.
- Repositories remain resilient and globally available.

Use Cases

1. User Websites Without Hosting

- Users create Markdown-based sites in a public repo.
- Security prevents raw HTML/JS; users instead rely on Markdown components.
- Users can only modify areas tied to their identity key.

2. Movie Repository TMDB Integration

- Users add missing movies via TMDB plugin into a beta branch.
- Edits persist while browsing that branch.

3. Voting & Review Branches

- Servers auto-create a voting branch when needed.
- Special files enable reviews, complaints, and structured feedback.
- Voting doesn’t modify the main branch.

Blockchain-Style Security

- Commits can be signed with certificates.
- Only the private key holder can authorize main-branch changes.
- rules.yaml defines what actions are allowed and by whom.
- Most actions allow anonymous users; identity is only required for restricted operations.

Pull Requests

- Branch drift reveals potential pull requests.
- Users and admins can see all active PRs.
- Admin approval is default, but rules may allow merge based on community votes.

Performance

- Relay is built in Rust for maximal performance.
- Zero-delay, zero-downtime deployment—HTTP server reads directly from Git.

Hosting & Sponsorship

- Master nodes can host any repository but may not store all repos.
- Repositories require sponsorship from at least one master node.
- As long as repos follow size rules, they receive free hosting indefinitely.
- Public-private keys enforce permissions for sensitive files.
- Creators can rotate keys via upstream (e.g., GitHub) if necessary.
- Lost keys allow forking and reasserting ownership without losing history.

Relay Server Binary

- Relay server is a high-performance Rust HTTP server reading directly from Git.
- Requires environments that allow running binaries; Docker is primary solution.
- Anyone can run a Dockerized Relay node.
- Nodes connect through a tracker (future versions may decentralize this).

The Relay Promise

A standard set of web protocols guaranteed by all Relay master nodes: - Supports GET, POST, PUT, DELETE, and QUERY. - Any client can interact with Relay as long as it follows these protocols. - Any website built on Relay protocols is accessible by any client implementing them. - Relay does not enforce UI or specific clients —fully open ecosystem.

Decentralization Without Expensive Hardware

- Master nodes can run advanced services: Git, HTTP, IPFS, torrent, Docker workloads, game servers.
- Websites gain capabilities far beyond static/dynamic hosting.
- Idle hardware across the network can be used to support demanding tasks.

AI-Capable Future

- Relay data will be accessible through a standardized AI model.
- Idle hardware will power a shared Relay LLM.
- AI will assist with repo setup, rule management, QA, abuse detection, and automation.
- Keeps costs zero by distributing compute across idle nodes.

Branching Strategy

- Main branch: deployed content.
- Development branch: anonymous, messy, experimental contributions.
- Staging branch: controlled QA and volunteer reviews.
- PR process governs merges into main.
- Relay does not mandate branch names or patterns but guarantees a place for anonymous contribution.

Final Summary

Relay is a secure, decentralized, high-performance collaborative web platform. It empowers users to contribute safely, host websites without infrastructure, participate in governance, and eventually leverage AI assistance—all while keeping the network open, resilient, and community-driven.