SOMNIA STREAM

RPC PROTECTION LAYER WITH REAL-TIME DATA STREAMING

Somnia DeFi Mini Hackathon 2024

DevTooling Track

Built with **\(\psi\)** for the Somnia ecosystem

⚠ THE PROBLEM & OUR SOLUTION



Oirect WebSocket connections can

overwhelm RPC infrastructure and
degrade performance



Multiple apps connecting directly creates **connection limits** and performance issues



Single RPC connection serves thousands of clients via SSE & NATS



Enables **unlimited DeFi applications** without infrastructure concerns

RPC PROTECTION ARCHITECTURE



SINGLE RPC CONNECTION → THOUSANDS OF CLIENT CONNECTIONS



1x



1000x











KEY FEATURES & BENEFITS



RPC PROTECTION

Single connection prevents node overload and ensures stability



Choose SSE (web apps) or NATS (high-performance)



REAL-TIME DATA STREAMS

Blocks (2s) • Pending Txs (3s) • Logs (5s) • Network Stats • Gas Prices



DDOS RESILIENCE

Protection layer absorbs **connection spikes** and malicious traffic



UNLIMITED SCALABILITY

Support thousands of applications without RPC performance impact



COST EFFICIENCY

Single infrastructure serves entire DeFi ecosystem

▶ LIVE DEMO & PERFORMANCE

REAL-TIME BLOCKCHAIN DATA PROTECTION IN ACTION

RPC CONNECTION

1000+

CLIENT CONNECTIONS

< 1s

DATA LATENCY

Access Methods:

SSE: GET /sse/blocks • /sse/pending • /sse/logs

NATS: nats://server:4222/eth.blocks.full

Professional Frontend: Real-time dashboard with modern UI/UX

P DEFI USE CASES & APPLICATIONS



React to market changes **instantly** with real-time transaction data



MEV PROTECTION

Monitor mempool for front-running **detection** and protection



DEFI NOTIFICATIONS

Alert systems for liquidations & arbitrage opportunities

ANALYTICS PLATFORMS

Real-time dashboards for **DeFi** protocols and users



YIELD FARMING

Track **APY changes** and optimal farming strategies



₹ DEX AGGREGATORS

Monitor liquidity pools and price movements

</>> TECHNICAL EXCELLENCE



HIGH PERFORMANCE STACK

Go + Gin Framework + NATS JetStream + go-ethereum Sub-second latency • 1000+ concurrent connections • 99.9% uptime



CONNECTION MANAGEMENT

Single RPC Connection + Autoreconnection

Efficient resource utilization • Graceful error handling



= DATA DISTRIBUTION

Fan-out Architecture + Message Persistence

One source → thousands of consumers • Message replay capability



X PRODUCTION READY

Docker + Kubernetes + .env Config Easy deployment • Environment configuration • Health monitoring

E MARKET IMPACT & VALUE PROPOSITION



- DeFi Protocol Developers
- Trading Firms
- Analytics Companies
- Individual Developers

▼ COMPETITIVE ADVANTAGE

- RPC Protection vs overwhelming nodes
- 1000+ clients vs limited connections
- **Dual access** vs single protocol
- **Somnia native** vs generic solutions

90%
DEVELOPMENT TIME SAVED

10x
FASTER THAN POLLING

\$0
INFRASTRUCTURE SETUP COST

A SECURITY-FIRST ROADMAP



- NATS Proxy Protection: Additional layer to secure NATS JetStream access
- Read-only API Keys: Granular authentication with limited permissions
- Rate Limiting & Access Control: Per-key throttling and user isolation

🚀 PHASE 2 - ADVANCED FEATURES (Q2 2025)

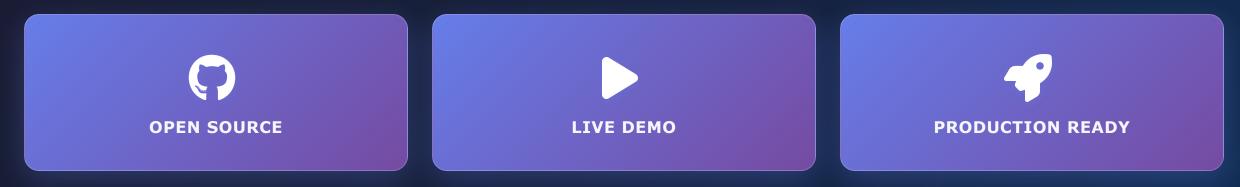
- WebSocket Support: Bidirectional communication for advanced use cases
- Custom Filtering: Client-side event filtering and subscriptions
- Historical Replay: Time-based data replay functionality

** PHASE 3 - ENTERPRISE & ANALYTICS (Q3-Q4 2025)

- Multi-tenant Architecture: Isolated environments for organizations
- Built-in MEV Detection: Real-time MEV opportunity identification
- Predictive Analytics: AI-powered gas price and network predictions



SOMNIA STREAM - THE INFRASTRUCTURE DEFI NEEDS



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Questions & Discussion
Let's build the future of DeFi together

