BLOCKDAEMON

"It's NOT about slashing!"

Institutional due diligence on Eth staking risks and their mitigations

D1conf in Bangkok - November 2024

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- Co-Founder & Chief Data Officer (2018 – 2021)
  at **Anyblock Analytics GmbH**
  → acquired by **Blockdaemon** (since Dec 2021)

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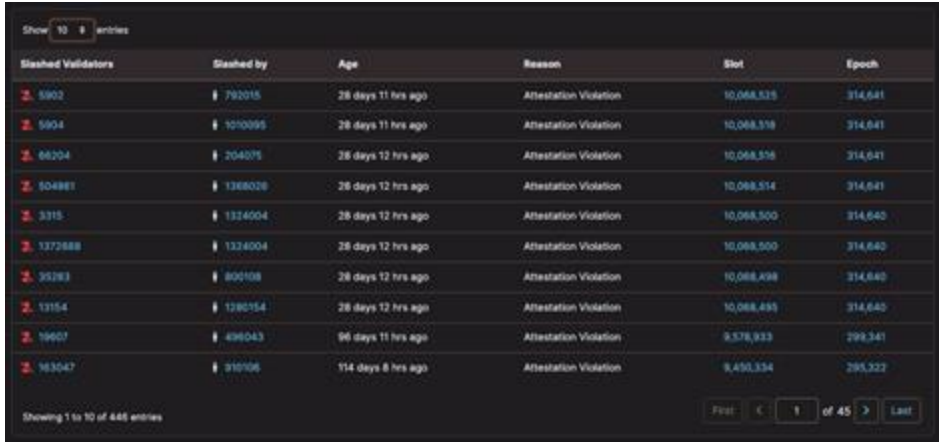
ANY block
ANALYTICS

What to expect

1. Slashings are rare - and Pectra makes them cheap
2. Risks in ETH Staking
3. Mitigations to Correlation Risks
4. How to Optimize Rewards
5. What to look for in a staking provider

Slashings are rare - and Pectra makes them cheap

- 446 validators were slashed in ~4 years, out of ~1 million validators = **0.04%**
- ~125 separate instances, practically all **double-signing due to wrong setup or careless node failover**
- Pectra hard fork (Q1-2024) will reduce **initial slashing penalty** from 1 Eth per 32 Eth by 128x or more, **to ~20 USD or less**
- **Correlation penalty never triggered** (would require 1% = 10k validators to get slashed within 36 day window; if 33% of staked Eth gets slashed in that period, full collateral lost)



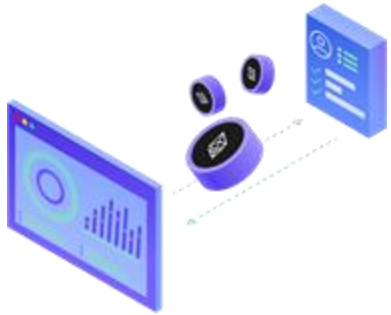


Image: https://beaconcha.in/validators/slashings

Risks in ETH Staking

01 **Slashing**
(maliciously or stupid)

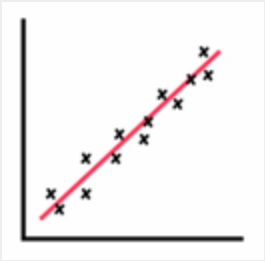
02 **Downtime**
(offline penalty)

03 **Rewards & Liquidity**
(performance/PRR & withdrawal queue)

Correlations are the real danger!

- **Client bugs**
- **Geo/Provider risks**
- (anti-correlation penalties/ incentives in the future?)

Mitigations to Correlation Risks



Correlations are the real danger!

- **Client bugs**
- **Geo/Provider risks**
- (anti-correlation penalties/ incentives in the future?)

Client Diversity
(Consensus & Execution Layer)

Various cloud & bare-metal data centers in different jurisdictions

Distributed Validators
(Sharded validator keys)

How to Optimize Rewards

Total ETH PRR: ~3.5 %
(avg. rewards in 2024)

Protocol rewards (~80%)

KPI: Validator Effectiveness Rating
From rated.network

- Great network connectivity and crypto-optimized Tier III data centers around the world
- **Bare metal nodes slightly higher performance** than cloud-based setups
- High performance Ethereum clients (default Prysm/Geth)
- Offering choices for all of the above for risk diversification

Transaction & MEV rewards (~20%)

KPI: Execution Layer rewards earned vs. missed/orphaned slots

- **Use MEV-boost** (~4x more EL rewards per block)
- **Responsible latency optimization** (requires detailed monitoring)
- **Connected to multiple relays** for maximum redundancy (or limit to OFAC-compliant relays)

What to look for in a staking provider

- **Risk mitigations & Reward optimizations as before**
- **Slashing insurance from node operator**
  → or even reward guarantee
  → *optional top-up insurance of collateral*
  e.g. via Quantstamp / Chainproof available!
- **Strong company position**
  (history, balance sheet, profitability / runway)
  → e.g. growth in bear market?
- **Mature processes & IT security**
  → e.g. SOC 2 / ISO 27001 certification
- **24x7 support around the world**
  → SLA guarantees
- **Reporting & API integrations**
  → e.g. multi-chain API & backend system integration

- **Custodian integrations**
- **Compliance approach**
  → e.g. connecting only OFAC-compliant relays reduces rewards somewhat & requires monitoring
- **Third-party metrics**
  (PRR, validator effectiveness, compliance)
  → e.g. via rated.network and Metrika
- **Environmentally Conscious Infrastructure**
  → reduce ESG footprint

Image: https://www.blockdaemon.com/infrastructure

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APPENDIX / BACKUP