KOBRADAG Whitepaper V2

Date: April 2025

⬚ Overview

KOBRADAG (KODA) is a next-generation fork of the Kaspa blockchain, built to preserve the core values of decentralization and accessibility through a novel, GPU-focused approach to mining.

⬚ Introduction

Kaspa is a trailblazing blockchain platform that implements the GhostDAG protocol, leveraging a Directed Acyclic Graph (DAG) structure. Unlike traditional blockchains with linear progression, GhostDAG allows multiple blocks to be added in parallel, dramatically increasing scalability and transaction throughput. Despite its advanced performance characteristics, Kaspa retains strong commitments to decentralization and security, making it a strong foundation for scalable blockchain applications.

⊘ For more information, see the official documentation on the GhostDAG protocol.

⚠ Problem Statement

Kaspa's original mining algorithm was designed to be ASIC-friendly. While this design choice maximized performance, it unintentionally led to the centralization of mining power in large-scale industrial farms.

These ASIC farms, equipped with specialized hardware, outperform individual miners, concentrating power in the hands of a few and undermining the network's democratic and decentralized foundations. This poses several risks:

- **Loss of network neutrality**
- **Increased vulnerability to 51% attacks**
- **Exclusion of small-scale or home miners**
- **Erosion of blockchain's foundational ideals**

☑ Our Solution

The KOBRADAG (KODA) project proposes a paradigm shift: replacing ASIC dominance with a GPU-centric mining algorithm. This makes mining more accessible to a wider population, re-democratizing the network and realigning with decentralization ideals.

By leveraging GPUs, which are more affordable and readily available, KODA reopens the network to:

- **Hobbyists**
- **Independent miners**
- **Small mining cooperatives**

⚙ Key Benefits of GPU Mining

- **Mining Democracy: GPUs are common in personal computers, empowering anyone to join the mining ecosystem.**
- **Decentralization & Security: Mining power is more evenly distributed, reducing reliance on central authorities and mitigating 51% attack vectors.**
- **Inclusivity & Sustainability: Broader participation encourages a stronger, more resilient network while maintaining energy efficiency.**
- **Resistance to Monopolization: By discouraging ASIC dependence, KODA protects its network from industrial control and hardware-based gatekeeping.**

⬚ Conclusion

By shifting to GPU mining, KOBRADAG takes a firm stand for the future of decentralized infrastructure. It offers a scalable, secure, and fair ecosystem that truly reflects the original promise of blockchain technology — one that is open, participatory, and resilient against centralization.

📎 **Appendices**

• **Figure 1: ASIC vs. GPU Mining Efficiency**

A comparative graph visualizing mining hardware efficiency across key criteria such as accessibility, cost, decentralization, and energy use.

☑ *Highlights the superiority of GPU mining in fostering a more democratic and accessible mining landscape.*

• **Table 1: Current Mining Power Distribution**

A data table presenting the existing power imbalance in mining ecosystems, showcasing how ASIC farms dominate the majority of the network's hashrate.

• **Figure 2: Projected Distribution Post-GPU Adoption**

A forecasted distribution model displaying how GPU-centric mining can reclaim decentralization, boosting the participation of individual and small-scale miners across the globe.

🎯 **Project Goals**

⬜ **1. Decentralization**

GPU mining actively strengthens decentralization in the network through:

- **Broader Mining Distribution**
  GPUs are widely available and affordable, making it viable for individuals worldwide to participate. This naturally decentralizes the hashrate and reduces dependency on institutional farms.
- **Mitigation of Centralization Risk**
  With ASIC mining, control can centralize in a few powerful entities. KOBRADAG's GPU focus democratizes mining by lowering economic and technical barriers to entry.

🔒 **2. Accessibility**

GPU-based mining drastically reduces the obstacles faced by new participants:

- **Affordability**
  GPUs come in various price points and are far cheaper than custom ASIC rigs, lowering the financial barrier for miners.
- **Availability**
  Unlike ASICs, GPUs are found in mainstream consumer devices, from gaming PCs to workstations — making it easier for users to start mining.
- **Versatility**
  GPUs are multi-functional: aside from mining, they support gaming, 3D rendering, and AI workloads. This means users can switch between purposes without dedicating a device solely for mining — increasing flexibility and long-term value.
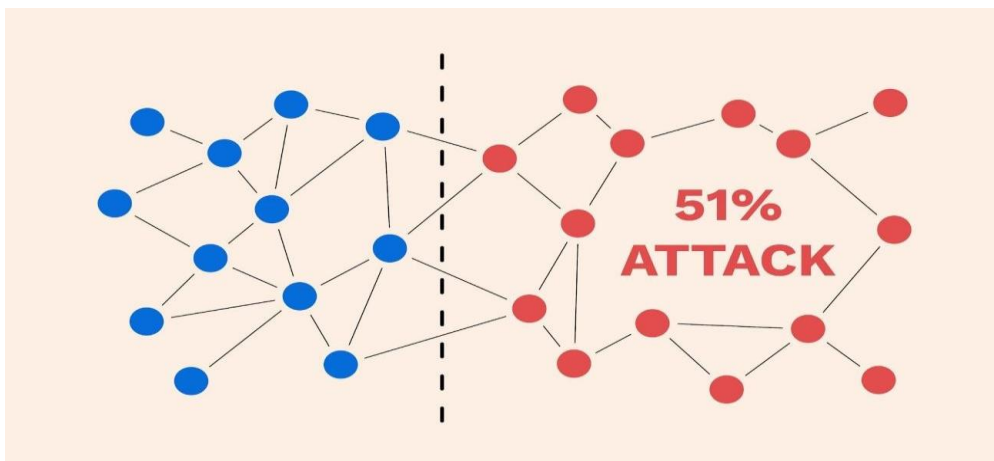
🔐 Network Security

GPU-based mining significantly enhances the security of the KOBRADAG network by enabling decentralization, increasing participant diversity, and improving adaptability.

1. 🛡 Resistance to 51% Attacks

A decentralized GPU mining model makes it far more difficult for any single entity to gain majority control of the network's hashrate.

This effectively mitigates the risk of 51% attacks, in which a dominant miner could manipulate block validation or reverse transactions.

By distributing mining power across thousands of individual nodes, network integrity remains intact.

2. 🌐 Diverse Participant Base

The accessibility of GPU mining allows a wide range of participants — from hobbyists to small collectives — to contribute to the network.

This diversity ensures that no single group holds disproportionate influence, and that the ecosystem benefits from the collective vigilance of its community.

3. 🔁 Adaptability & Resilience

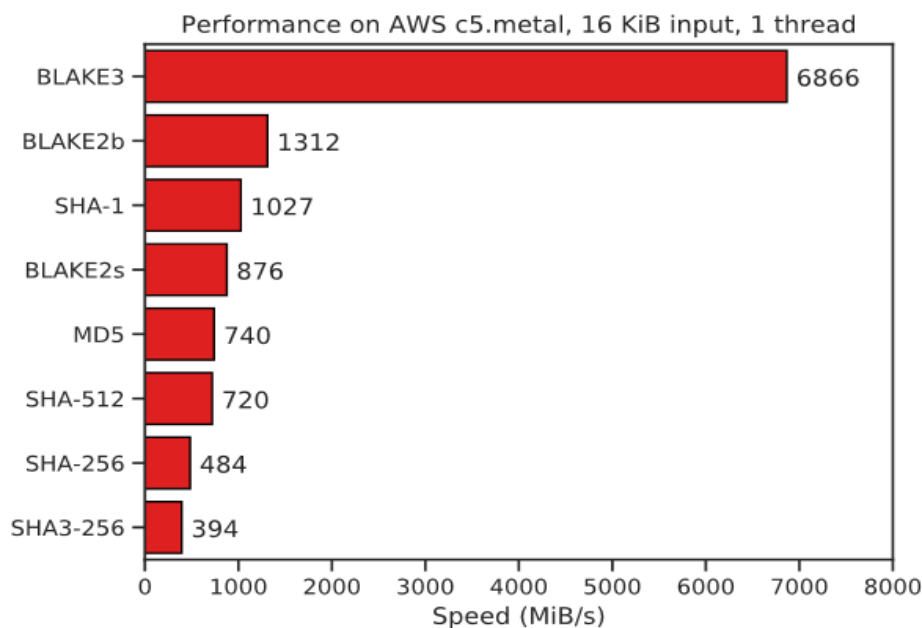GPUs are not locked into a single algorithm, unlike ASICs. This flexibility means the network can:

- **Rapidly pivot to new hashing algorithms**
- **Introduce protocol upgrades**
- **Respond to emerging threats**
  …all without requiring massive hardware reinvestments from participants.
  This adaptive capacity strengthens long-term network resilience and security.

☑ **In conclusion, GPU mining is not only a tool for decentralization — it is a critical pillar of security.**
It fortifies the network against malicious attacks, expands the ecosystem's diversity, and empowers it to evolve with changing technological demands.

This approach is deeply aligned with blockchain's original mission: open, inclusive, and secure systems for all.

Performance on AWS c5.metal, 16 KiB input, 1 thread

Algorithm	Speed (MiB/s)
BLAKE3	6866
BLAKE2b	1312
SHA-1	1027
BLAKE2s	876
MD5	740
SHA-512	720
SHA-256	484
SHA3-256	394

⚙️ **Technical Specifications**

Algorithm: KODAHASH (formerly BLAKE3)

KOBRADAG (KODA) originally utilized the BLAKE3 hashing algorithm, chosen for its exceptional speed, simplicity, and efficiency across general-purpose hardware like CPUs and GPUs.

However, as part of the project's evolution, KODAHASH — a custom-designed hashing algorithm exclusive to KODA — was introduced to further strengthen resistance against ASIC optimization and enhance performance on modern GPUs.

🔍 **KODAHASH Advantages:**

1. **ASIC Resistance**
   Developed in-house, KODAHASH was designed to prevent hardware monopolies by avoiding characteristics that allow ASICs to easily optimize for it.
2. **Parallelism and Speed**
   The algorithm supports multi-threaded, high-parallel computation — ideal for GPU-based mining.
3. **General Hardware Optimization**
   Similar to BLAKE3, KODAHASH is built to perform efficiently on widely available consumer-grade hardware, making mining more inclusive.

☐ *KODAHASH builds on the foundation of fast hashing algorithms, with modifications to ensure long-term adaptability and decentralized mining viability.*

☑️ **Tokenomics**

🚀 **Launch and Distribution**

- **Launch Date: 28 May 2024**
- **Pre-Sale: None — ensuring fair launch and distribution**
- **Initial Supply: 0 (pure PoW emission model)**

💰 **Emission Schedule**

- **Follows a monthly halving model**
- **Monthly reductions implemented gradually for smoother transitions**
- **First halving scheduled: june 2024**

☐ **Block Rewards**

- **Current Reward: 10 KODA per block**
- **Block Time: Consistent with Kaspa DAG-based architecture**
- **Mining Reward Adjustment: Dynamically adjusted based on halving schedule**

💼 **Supply and Market Info**

- **Maximum Supply: 445,000,000 KODA**
- **Initial Max Supply (v1): 500,000,000 KODA**
- **Listing: Now officially listed on XEGGEX**
- **Market Cap: Based on community valuation and circulating supply; live metrics available via explorer.k0bradag.com**

🔗 Links & Resources

- 🌐 **Website:** https://www.k0bradag.com

- 💻 **GitHub Repository:** https://github.com/kobradag

- 🔍 **Explorer:** https://explorer.k0bradag.com

- 🗂 **Web Wallet:** https://wallet.k0bradag.com

- 🦉 **Twitter:** https://twitter.com/k0bracurrency

- 💬 **Discord:** https://discord.gg/BeNxna8YZ2

- 📱 **Telegram:** https://t.me/k0bradag

🔍 Technical Note: Why BLAKE3 Resists ASIC Centralization

Although KOBRADAG now utilizes the custom **KODAHASH**, understanding BLAKE3's properties offers context for the network's original ASIC-resistant foundation.

⚙️ Why BLAKE3 Was a Strong Choice Initially:

- **ASIC Specialization Barrier**
  ASICs are built for **massively deployed algorithms** like SHA-256 or Ethash. Since BLAKE3 is relatively **new and niche**, there was little incentive to develop dedicated ASICs for it.

- **High Development Overhead**
  ASIC creation demands **significant engineering and financial resources**. For an algorithm without widespread adoption like BLAKE3, ASIC manufacturers are unlikely to invest in its development.

- **General-Purpose Hardware Optimization**
  BLAKE3 performs **exceptionally well on CPUs and GPUs,** using modern SIMD instructions and multithreading. This makes specialized hardware redundant for achieving high performance.

🐍 **Conclusion**: BLAKE3's design inherently resists ASIC optimization — a philosophy carried forward and enhanced by **KODAHASH** in KOBRADAG's current implementation.