BrainArk Technical Specification for CoinMarketCap
Comprehensive Token and Network Documentation

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Executive Summary

BrainArk (BAK) is the native utility token of the BrainArk Hyperledger Besu blockchain network. The
network provides ultra-low cost transactions (99.95% cheaper than Ethereum) with 2-second block times and
instant finality, making it ideal for DeFi, gaming, micropayments, and enterprise applications.

Token Information

Basic Token Details
- **Token Name:** BrainArk
- **Token Symbol:** BAK
- **Token Type:** Native Blockchain Token (ERC-20 Compatible)
- **Blockchain:** BrainArk Besu Chain
- **Total Supply:** 1,000,000,000 BAK (Fixed Supply)
- **Circulating Supply:** 600,000,000 BAK (at launch)
- **Decimals:** 18
- **Launch Date:** January 2025

Network Specifications
- **Chain ID:** 424242
- **Network ID:** 424242
- **Consensus Mechanism:** Istanbul Byzantine Fault Tolerance (IBFT)
- **Block Time:** 2 seconds
- **Transaction Finality:** Instant
- **Gas Price:** 1,000 wei (0.000000001 BAK)

Contract Addresses
- **Token Contract:** [To be deployed]
- **Time-Lock Contract:** [To be deployed]
- **Validator Staking Contract:** [To be deployed]

Network Information

RPC Endpoints
- **Mainnet RPC:** https://rpc.brainark.online
- **WebSocket:** wss://ws.brainark.online
- **Block Explorer:** https://explorer.brainark.online

Network Addition to MetaMask
```json
{
  "chainName": "BrainArk Mainnet",
  "chainId": "0x67932",
  "rpcUrls": ["https://rpc.brainark.online"],
  "nativeCurrency": {
    "name": "BrainArk",
    "symbol": "BAK",
    "decimals": 18
  },
  "blockExplorerUrls": ["https://explorer.brainark.online"]
}
```

Tokenomics

Distribution Model
Category	Allocation	Amount (BAK)	Percentage	Vesting

Validator Rewards	500,000,000	500M BAK	50%	30-year time-lock
- Active Circulation	100,000,000	100M BAK	10%	Immediate
- Time-Locked Reserve	400,000,000	400M BAK	40%	30 years
Development Fund	300,000,000	300M BAK	30%	5-year vesting
Ecosystem Growth	150,000,000	150M BAK	15%	3-year vesting
Strategic Reserve	35,000,000	35M BAK	3.5%	Foundation controlled
Airdrop Program	10,000,000	10M BAK	1%	Community distribution
Referral Rewards	5,000,000	5M BAK	0.5%	Community distribution

Time-Lock Mechanism Details
- **Purpose:** Long-term network stability and inflation control
- **Locked Amount:** 400,000,000 BAK (40% of total supply)
- **Lock Duration:** 30 years
- **Annual Release:** 13,333,333 BAK
- **Monthly Release:** 1,111,111 BAK
- **Daily Release:** ~36,496 BAK

Use Cases and Utility

Primary Use Cases
1. **Network Gas Fees:** All transactions on BrainArk network
2. **Validator Staking:** Required for network consensus participation
3. **Governance Voting:** Protocol parameter changes and upgrades
4. **DeFi Applications:** Liquidity provision, lending, borrowing
5. **Cross-Chain Bridges:** Transfer value between networks

Economic Value Drivers
- **Transaction Demand:** Higher network usage increases token utility
- **Validator Requirements:** Node operators must stake BAK
- **Fee Burn Mechanism:** 10% of transaction fees are burned
- **Scarcity Model:** 40% of supply locked for 30 years
- **DeFi Integration:** Core token for ecosystem applications

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Technical Architecture

Consensus Mechanism
- **Algorithm:** Istanbul Byzantine Fault Tolerance (IBFT)
- **Fault Tolerance:** Up to 33% malicious validators
- **Finality Type:** Instant (single block confirmation)
- **Energy Efficiency:** No mining, validator-based consensus

Performance Metrics
- **Block Time:** 2 seconds (consistent)
- **Transaction Throughput:** 1,000+ TPS (practical), 10,500+ TPS (theoretical)
- **Network Latency:** <100ms globally
- **Uptime Target:** 99.99%
- **Current Uptime:** 99.95%

Scalability Solutions
- **Current:** Single-chain IBFT
- **Phase 2 (Q3 2025):** Sharding implementation
- **Phase 3 (2026):** Layer 2 integration
- **Future:** Cross-chain interoperability

Security Model

Network Security
- **Validator Security:** Enterprise-grade infrastructure
- **Cryptography:** Keccak-256 hashing, ECDSA signatures
- **Network Protection:** TLS encryption, DDoS mitigation
- **Smart Contract Audits:** Professional security reviews

Economic Security
- **Slashing Conditions:** Validator misbehavior penalties
- **Minimum Stake:** Required BAK holding for validators
- **Insurance Fund:** Community treasury for emergencies
- **Incident Response:** 24/7 monitoring and rapid response

Governance and Development

Governance Structure
- **Phase 1 (Current):** Foundation governance with community input
- **Phase 2 (2025):** Hybrid governance with token voting
- **Phase 3 (2026):** Full DAO governance implementation

Development Roadmap
- **Q1 2025:** âœ… Network launch, validator setup, basic tools
- **Q2 2025:** Performance optimization, mobile integration
- **Q3 2025:** Validator expansion, sharding research
- **Q4 2025:** 25-validator network, Layer 2 integration
- **2026:** 100+ validators, mature ecosystem

Market Information

Initial Market Details
- **Launch Price:** $0.02 USD
- **Initial Market Cap:** $20,000,000 (based on circulating supply)
- **Fully Diluted Valuation:** $20,000,000
- **Expected Trading:** Q1 2025

Exchange Listings
- **DEX Trading:** Available on BrainArk DEX
- **CEX Listings:** Planned for major exchanges
- **Liquidity Provision:** Bootstrap pools with development fund

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Community and Support

Official Channels
- **Website:** https://brainark.online
- **Documentation:** https://docs.brainark.online
- **Block Explorer:** https://explorer.brainark.online
- **GitHub:** https://github.com/brainark

Social Media
- **Twitter:** [@sdogcoin1](https://x.com/sdogcoin1)
- **Telegram:** [@Brainark_Besu_BlockChain](https://t.me/Brainark_Besu_BlockChain)
- **Discord:** BrainArk Community Server
- **Reddit:** r/BrainArk

Developer Resources
- **Developer Portal:** https://dev.brainark.online
- **API Documentation:** https://api.brainark.online
- **Grant Program:** Up to $100,000 per project
- **Technical Support:** brainarkbesuchain@gmail.com

Regulatory and Compliance

Legal Structure
- **Entity Type:** Foundation/DAO hybrid
- **Jurisdiction:** [To be specified]
- **Compliance:** Securities regulations reviewed
- **AML/KYC:** As required by jurisdiction

Token Classification
- **Utility Token:** Primary classification
- **Network Function:** Essential for blockchain operation
- **Not a Security:** Based on Howey test analysis
- **Regulatory Review:** Ongoing compliance monitoring

Risk Factors

Technical Risks

- **Smart Contract Bugs:** Mitigated through audits and testing
- **Network Attacks:** Byzantine fault tolerance provides protection
- **Scalability Limits:** Roadmap addresses through sharding
- **Consensus Failure:** Multiple validator redundancy

Market Risks
- **Price Volatility:** Common to all cryptocurrencies
- **Liquidity Risk:** Addressed through market maker programs
- **Regulatory Changes:** Ongoing compliance monitoring
- **Competition:** Differentiated through cost and speed advantages

Mitigation Strategies
- **Insurance Fund:** Community treasury for emergencies
- **Professional Audits:** Regular security reviews
- **Diverse Validator Set:** Geographic and operational diversity
- **Legal Review:** Ongoing regulatory compliance

Conclusion

BrainArk represents a significant advancement in blockchain technology, offering 99.95% cost reduction compared to Ethereum while maintaining security and decentralization. The BAK token is essential for network operation and provides multiple utility functions within the ecosystem.

The 30-year time-lock mechanism ensures long-term network sustainability while the ultra-low transaction costs enable previously impossible use cases like micropayments, high-frequency DeFi, and IoT device commerce.

Contact Information

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For Developer Support:
- **Technical Support:** brainarkbesuchain@gmail.com
- **Documentation:** https://docs.brainark.online
- **GitHub Issues:** https://github.com/brainark/issues

This document is accurate as of January 2025. For the latest information, please visit https://brainark.online