

ByteCoin White Paper

ByteDance Blockchain Initiative

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Abstract

ByteCoin is a stable, centralized cryptocurrency designed to enhance transparency, fairness, and accessibility across ByteDance's ecosystem, beginning with TikTok. Leveraging the high-performance SUI blockchain, ByteCoin enables fast, auditable, and tamper-resistant transactions for gifting, ad-revenue distribution, in-app purchases, and TikTok Shop interactions. ByteCoin empowers creators in regions with limited payment access, provides a reliable monetization mechanism, and encourages ecosystem spending, all while ensuring AML compliance via No-tabene.

1 Executive Summary

The digital economy of ByteDance platforms is rapidly expanding, yet creators and users face several challenges:

- Limited transparency in content monetization and ad-revenue distribution.
- Unequal access to payments in underbanked regions.
- Fragmented spending within platform ecosystems.

ByteCoin addresses these challenges by offering a blockchain-based token that:

- Ensures fair, formula-driven distribution of value to creators and users.
- Provides auditable and tamper-resistant transaction records.
- Integrates with TikTok Shop to promote in-ecosystem spending.
- Enables global access to monetization and payments.

2 Problem Statement

- Current in-app gifting and revenue systems are opaque; creators cannot fully track earnings.
- Many global creators cannot access payments due to banking or payment system restrictions.
- TikTok Shop and platform transactions lack a unified, seamless token-based mechanism to encourage spending within the ecosystem.

3 Technology

3.1 Why SUI Blockchain?

ByteCoin is built on the **SUI blockchain** due to its superior performance, security, and scalability:

- **High Throughput:** Tens of thousands of transactions per second, enabling real-time gifting and commerce.
- **Low Latency:** Sub-second finality ensures instant transaction settlement.
- **Parallel Execution:** Object-centric transaction processing avoids congestion, supporting simultaneous user interactions.
- **Secure Smart Contracts:** Move-based contracts allow formal verification, preventing common vulnerabilities.
- **Developer-Friendly:** Optimized for asset ownership and dynamic smart contract deployment.

Table: Comparison of Sui, Solana, and Ethereum (L1)

Feature	Sui	Solana	Ethereum (L1)
Theoretical TPS	~120,000	~65,000	15–30
Observed TPS (2024)	20-50	800-1200	<15
Latency / Finality	<1s	~0.4–0.6s	10–15s
Smart Contract Language	Move	Rust	Solidity
Execution Model	Parallel (object-centric)	Sequential (accounts-based)	Sequential
Security Model	Formal verification support	Moderate	Moderate
Stability / Uptime	High	Moderate	High

3.2 Dynamic Smart Contracts

ByteCoin employs smart contracts that:

- Split user payments between creators, ad-revenue pools, ByteDance reserve, and TikTok Shop purchases according to a predefined formula.
- Support minting of new ByteCoins as needed under central governance.
- Enable auditable flows for transparency and compliance.

3.3 AML Compliance

Transactions are monitored through **Notabene**, ensuring anti-money laundering (AML) and Know-Your-Customer (KYC) compliance globally.

4 Tokenomics & Smart Contract Allocation

4.1 Overview

ByteCoin is a stable cryptocurrency designed to facilitate value flows between users, creators, ByteDance, and TikTok Shop. Token allocation is governed by smart contracts that dynamically split ByteCoins across multiple pools based on quality, engagement, and fairness.

Key Pools:

- **Gift Pool:** Tokens used by users to buy stickers to gift to creators
- **Ad-Revenue Pool:** Tokens representing platform ad revenue allocated fairly to creators.
- **TikTok Shop Pool:** Tokens used for purchases on TikTok Shop by users or creators.
- **Reserve Pool:** Maintained by ByteDance to ensure liquidity, stability, and potential minting to fund pools if necessary.

4.2 Smart Contract Allocation Logic

Each pool has a tailored allocation formula encoded on-chain for transparency and verifiability:

- **Gift Pool:** Tokens from user spending are distributed to creators according to a smart contract formula, with a platform fee applied. The payout is calculated as:

$$p_c = f_{\text{creator}} \cdot \text{Amount spent by user}$$

where $f_{\text{creator}} = 1 - \text{platform fee}$ represents the fraction of the payment that goes to the creator after TikTok's cut.

The smart contract can dynamically select the allocation method, either using:

- **Donation Coin Split (Single-Video Optimization):** Optimizes payout for a single creator's video.
- **Platform-Wide Per-Video Coin Split Optimization:** Distributes tokens across multiple videos and creators based on quality-weighted engagement and fairness criteria.
- **Ad-Revenue Pool:** Tokens are distributed according to a multi-objective quality-weighted optimization model that balances fairness and efficiency.

Let:

- P : total ad revenue pool available to creators (after TikTok's platform cut).
- V : set of eligible videos (with compliance gate $C_v = 1$).
- $Q_v \in [0, 1]$: quality score of video v , derived from engagement, retention, and safety signals.
- Views_v : number of qualified views of video v .

- $M_v := \text{Views}_v \cdot Q_v$: effective impressions for v .
- $s_v := \frac{M_v}{\sum_{u \in V} M_u}$: baseline share for v .
- $w_v := s_v^\alpha$: fairness weight, $0 < \alpha \leq 1$.
- $p_v \geq 0$: payout allocated to video v (decision variable).

Payouts are determined by maximizing a convex combination of fairness and efficiency:

$$\begin{aligned}
& \max_{\{p_v\}_{v \in V}} \quad \lambda_{\text{fair}} \sum_{v \in V} w_v \log(p_v) + \lambda_{\text{eff}} \sum_{v \in V} s_v \frac{p_v}{P} \\
& \text{s.t.} \quad \sum_{v \in V} p_v = P, \\
& \quad p_v \geq \underline{p}_v \quad (\text{optional floor}), \\
& \quad p_v \leq \bar{p}_v \quad (\text{optional cap}), \\
& \quad p_v = 0 \quad \text{if } C_v = 0 \quad (\text{policy non-compliant}).
\end{aligned}$$

Interpretation

- λ_{fair} protects smaller but high-quality creators.
 - λ_{eff} rewards efficiency and reach.
 - α tunes inclusivity vs. competitiveness.
 - Compliance condition ensures safety and governance enforcement.
- **TikTok Shop Pool:** Transactions can originate from users or creators. Allocation to sellers/creators is calculated via a smart contract formula that accounts for the platform fee and any promotional adjustments:

$$p_{tx} = f_{\text{buyer}} \cdot \text{ByteCoin spent} \cdot f_{\text{promo}}$$

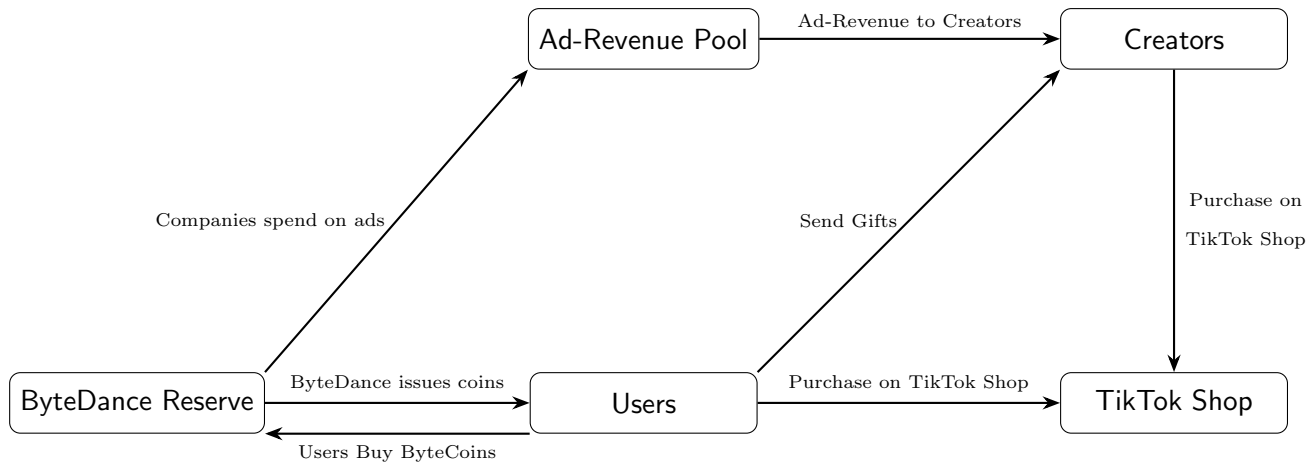
where

$$f_{\text{buyer}} = 1 - \text{platform fee}$$

represents the fraction of the payment that goes to the seller or creator after TikTok's cut, and f_{promo} can be adjusted for discounts or campaigns.

- **Reserve Pool:** Acts as a central bank:
 - Issues new ByteCoins when demand exceeds supply (minting policy).
 - Absorbs tokens from refunds, clawbacks, or expired allocations.
 - Stabilizes ByteCoin supply and price.

Multi-pool flow diagram



5 Roadmap

- **Q3 2025:** Smart contract development and internal testing.
- **Q4 2025:** Pilot integration in TikTok features (gifting, digital items).
- **Q1 2026:** Full platform launch with ByteCoin stablecoin and AML compliance via Notabene.
- **Q2 2026:** TikTok Shop integration, enabling ByteCoin payments for products.
- **Q3-Q4 2026:** Expansion to other ByteDance platforms (Douyin, CapCut, Helo).
- **Future Goals:** Monetization for underbanked creators worldwide; interoperability across ByteDance ecosystem.

6 Ecosystem & Use Cases

- **Creator Support:** Global gifting to creators.
- **In-App Purchases:** Stickers, badges, and other digital items.
- **Ad-Revenue Distribution:** Transparent allocation to creators.
- **TikTok Shop Transactions:** Users and creators can buy products using ByteCoin.
- **Platform-Based Transactions:** Seamless value exchange within ByteDance apps.
- **Analytics:** Token flow tracking enables optimization of platform economics.

Global Impact: ByteCoin provides monetization for creators without banking access and encourages spending within the ByteDance ecosystem.

7 Governance & Security

- **Centralized Governance (CeFi):** ByteDance manages issuance, minting, and smart contract adjustments.
- **Bug Bounties:** Incentivized programs for security improvements.
- **AML & Compliance:** Transactions monitored via Notabene to ensure legal and secure operations.

8 Legal & Compliance

- **AML/KYC:** Enforced via Notabene integration.
- **Regulatory Considerations:** Compliance with local financial laws.
- **Investor Disclaimer:** ByteCoin is intended solely for platform use and is not a speculative investment.

9 Risks and Limitations

- **Centralized Governance Risk:** ByteDance controls issuance and allocation.
- **Regulatory Risk:** Changes in laws could affect token usage.
- **Technical Risk:** Smart contract vulnerabilities, network congestion, or downtime.

10 Conclusion

ByteCoin represents a major step toward a transparent, fair, and accessible digital economy across ByteDance platforms. By combining blockchain technology, stablecoin mechanics, dynamic smart contracts, and AML compliance, ByteCoin ensures predictable, auditable, and equitable value flows. It empowers global creators, enables secure payments for users, and promotes in-ecosystem spending, creating a unified and vibrant ByteDance economy.