Kasway: The World's First Decentralized Point of Sale Solution v1.0.0

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Abstract

This paper introduces Kasway, a decentralized payment protocol built on top of the Kaspa blockchain. Kasway reimagines digital commerce by leveraging high-speed Layer 1 infrastructure to enable sub-second confirmation and near-zero latency payments. Unlike traditional payment processors, Kasway does not rely on escrow or custodial models. Instead, it utilizes uniquely derived payment addresses generated per transaction, improving both security and privacy.

The core idea behind Kasway is to enable secure, scalable, and censorship-resistant digital payments that are simple enough for merchants and powerful enough for developers. This whitepaper outlines the motivation, architecture, and design philosophy of the Kasway ecosystem.

1 Introduction

The increasing demand for real-time, low-fee payment solutions has pushed blockchain innovation beyond its initial scope. However, many existing networks are either too slow or too expensive for high-volume retail or micropayments. Kaspa, with its unique blockDAG structure and consistent 10 BPS (blocks per second) throughput, provides a perfect foundation for such systems.

Kasway builds on this foundation to provide a lightweight, non-custodial protocol that simplifies payment requests and settlements. It abstracts away the complexity of key management while preserving the core benefits of decentralization.

2 Technology Overview

At the heart of Kasway lies a server-side engine that generates a fresh address for every transaction using a randomly generated keypair. These keys are securely encrypted and stored temporarily until the transaction is completed. After confirmation, the keys are erased from memory, ensuring no long-term custodianship or security liabilities.

This "Program Derived" address model mimics Solana's PDA behavior but is implemented entirely off-chain, allowing Kasway to operate without requiring support for smart contracts—something currently absent in the Kaspa network. Despite this limitation, the system achieves program-like behavior through deterministic address generation and secure key lifecycle management.

3 Use Cases

Kasway is currently focused on enabling consumer-to-business (C2B) payments. Merchants can issue invoices, generate dynamic QR codes, and receive settlement in their own wallets or through designated proxy addresses. These proxy addresses allow business owners to decouple front-facing cashier accounts from their actual receiving wallets, enhancing both flexibility and privacy.

While business-to-business (B2B) support is not yet implemented, it remains a potential future direction as the platform evolves and the needs of the ecosystem expand.

4 Security and Privacy

Each transaction operates on its own address, which removes shared vulnerabilities and makes it harder for attackers to correlate transactions across different merchants or customers. Furthermore, since addresses are temporary and keys are self-destructing post-confirmation, Kasway avoids the risk of persistent attack surfaces.

No user funds are held in custody, and all transactions settle directly on the Kaspa blockchain. The system design favors transparency, integrity, and resilience.

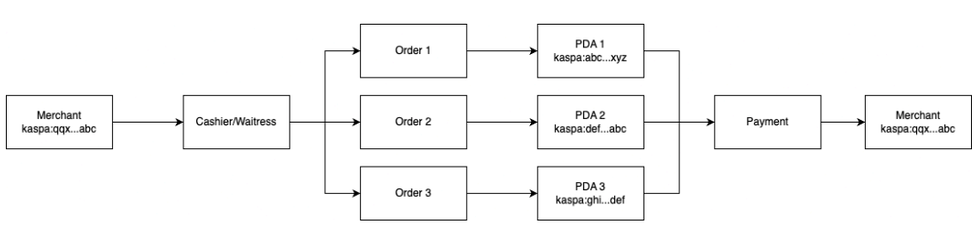

Figure 1.0 - Payment Through Cashier & PDA

5 Program Derived Address (PDA)

Kasway's payment system is heavily inspired by Solana's Program Derived Address (PDA) concept, adopting a similar model with a unique approach to address generation. This mechanism enables transactions to be programmatically signed, eliminating the need for user-side signatures during payment execution.

These addresses are generated by our server and uniquely associated with the merchant. They are securely encrypted, temporarily stored, and automatically destroyed once the payment is confirmed by the network. This approach ensures that merchants retain full control over their funds, enabling advanced actions such as Replace-by-Fee (RBF) and transaction retries — operations that are only possible with direct ownership.

The current implementation may evolve as we continue to research and refine our encryption and security model.

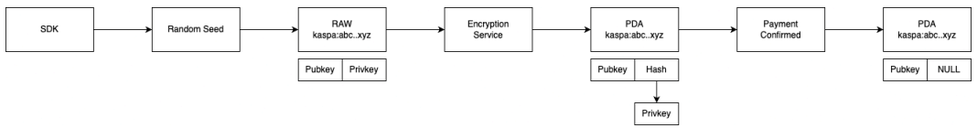

Figure 2.0 - PDA Lifecycle

6 Proxy Address

Kasway enables merchants to receive funds directly to any wallet address of their choice, regardless of brand or platform. This optional proxy address serves as the final destination for the funds after the payment is received and confirmed by the network, offering added flexibility and separation from the connected wallet.

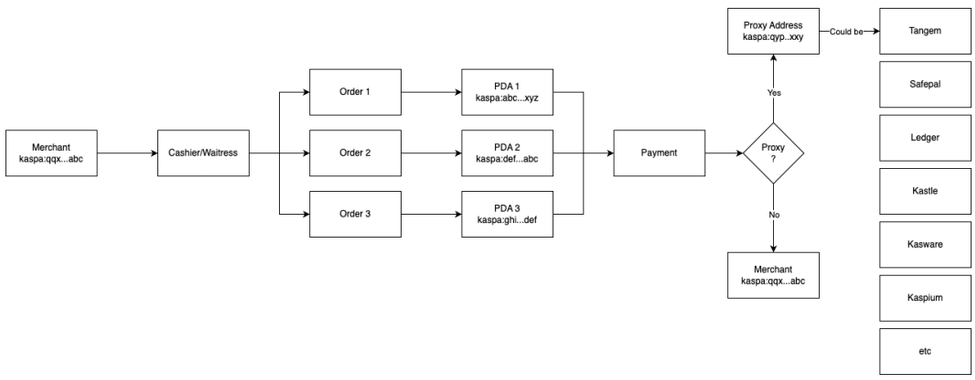

Figure 3.0 - Proxy Address

7 Fee Payer

Kasway's customizable fee payer feature enables merchants to decide who's responsible for covering the service fee. Merchants can choose to absorb the fee themselves as part of their business cost, or pass it on to the customer, by incorporating it into the total price. This flexibility empowers businesses to tailor their pricing strategies while maintaining a smooth user experience.

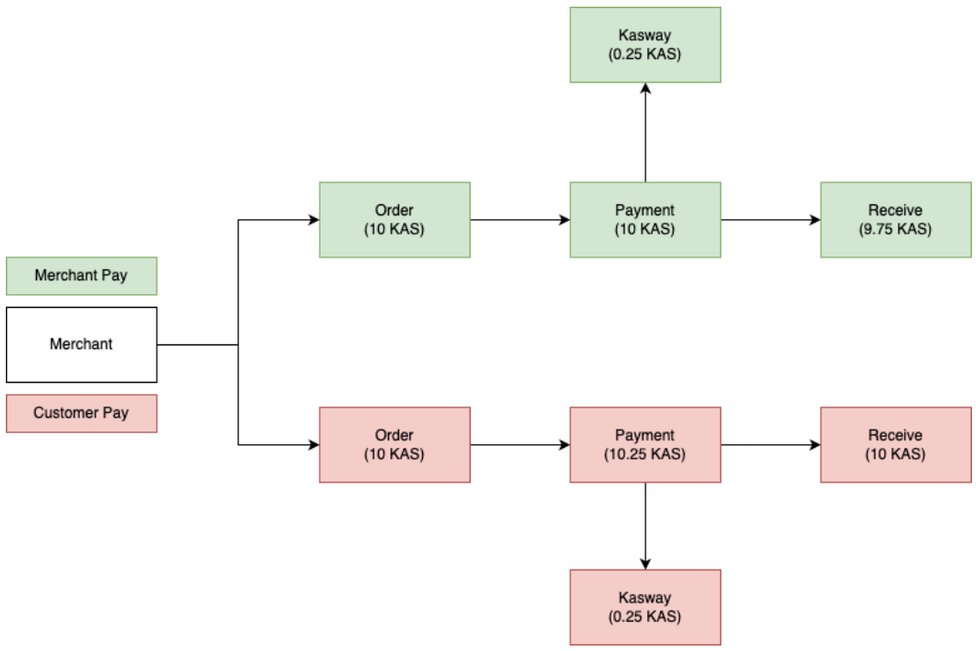

Figure 4.0 - Merchant Fee vs Customer Fee

8 Team Management

Kasway is built with first-class support for team-based merchants, enabling businesses to accept payments through one or more authorized employees. This feature offers operational flexibility across multiple branches without requiring business owners to share their private keys, ensuring both scalability and security.

Common examples of team-based merchants are Walmart, Coffee Shop and Restaurant.

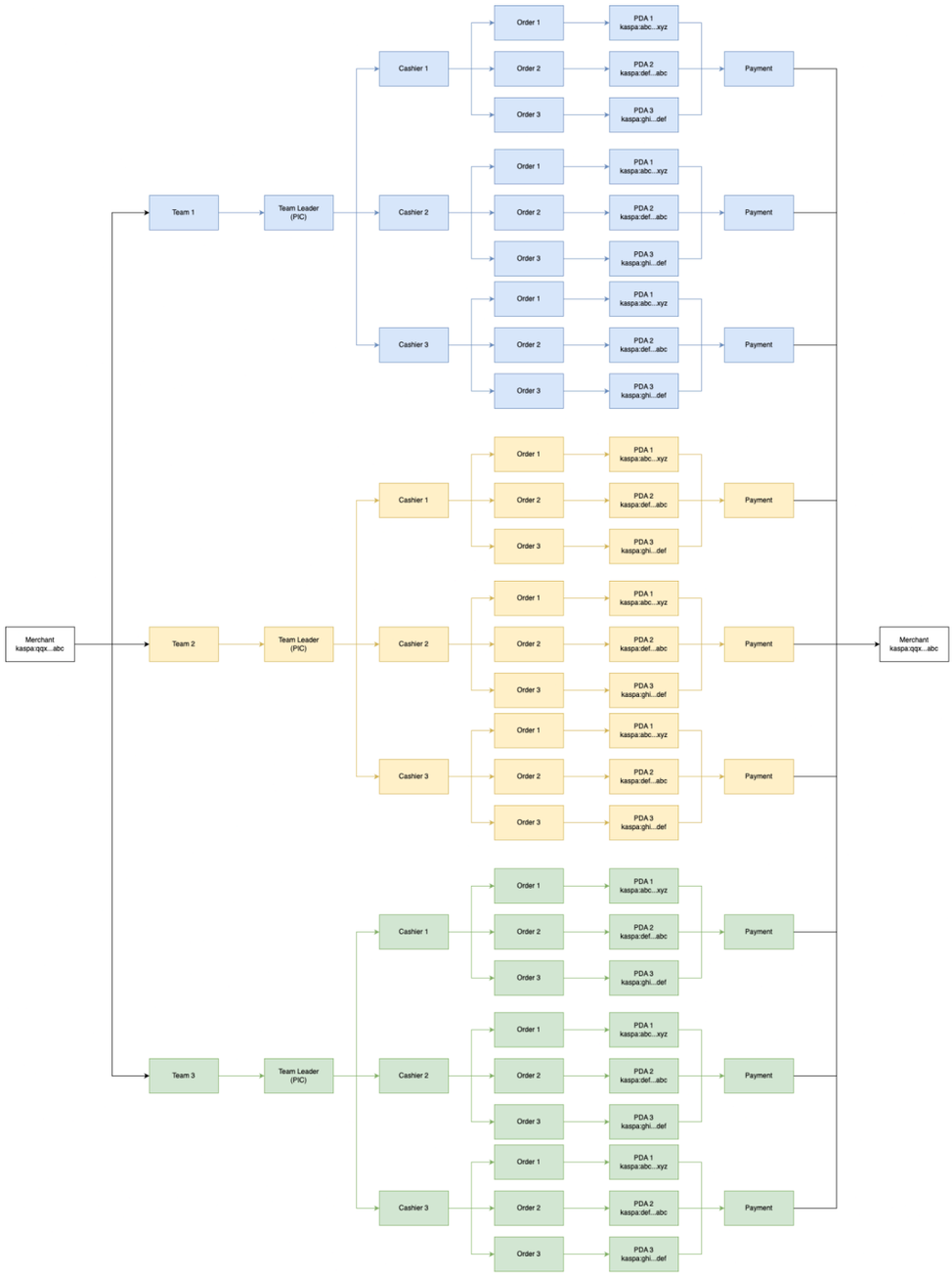

Figure 5.0 - Use case at Walmart

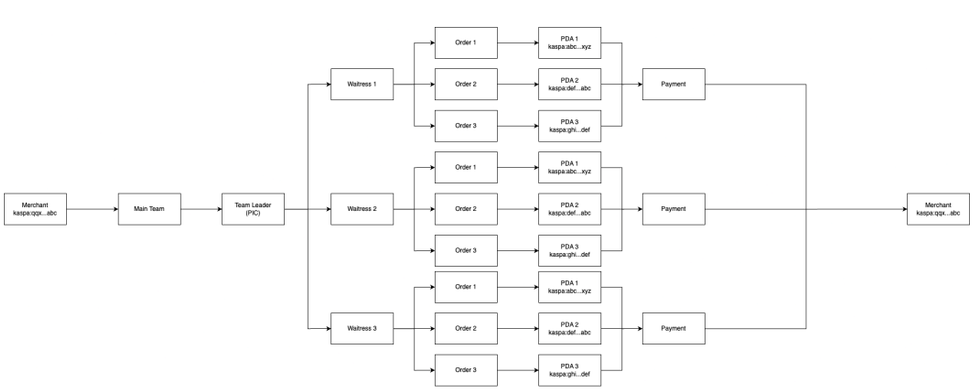

Figure 5.1 - Use case at Coffee Shop and Restaurant

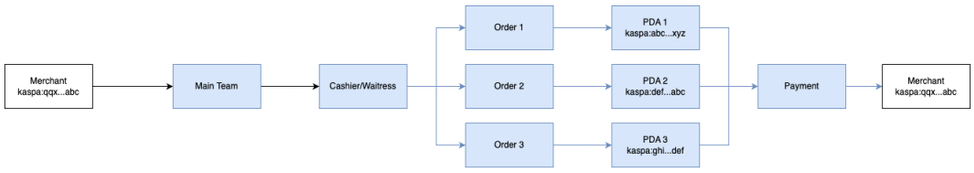

Figure 5.2 - Use case at small business

9 Tokenomics

Kasway **does not** issue its own token. Instead, all payments and fees are transacted in Kaspa's native currency, KAS. The platform applies a fixed fee of 0.25 KAS per transaction. This flat fee model was chosen for its simplicity and predictability, particularly for small businesses.

While the fee structure is subject to future adjustment based on network demand and strategic considerations, no additional tokens are planned. There is no presale, ICO, or staking model associated with Kasway. Should the community express the need for a native token in the future, it will be considered through the governance process.

10 Conclusion

Kasway represents a significant step forward in simplifying crypto payments for real-world use. By introducing a lightweight, programmable payment layer on top of the Kaspa network, Kasway empowers merchants to offer seamless, user-friendly payment experiences without compromising on speed, security, or decentralization.

Our unique architecture—featuring proxy addresses, fee delegation, and automated programmatic signing—solves many of the challenges traditionally associated with blockchain payments. Kasway is not only a tool but a bridge between traditional commerce and the evolving crypto economy.

As we continue to refine and expand the platform, community feedback will remain central to our development. Kasway is committed to transparency, innovation, and building practical solutions that serve the broader ecosystem.

We invite merchants and crypto-native users to explore Kasway, contribute to its growth, and help shape the future of frictionless, decentralized payments.