



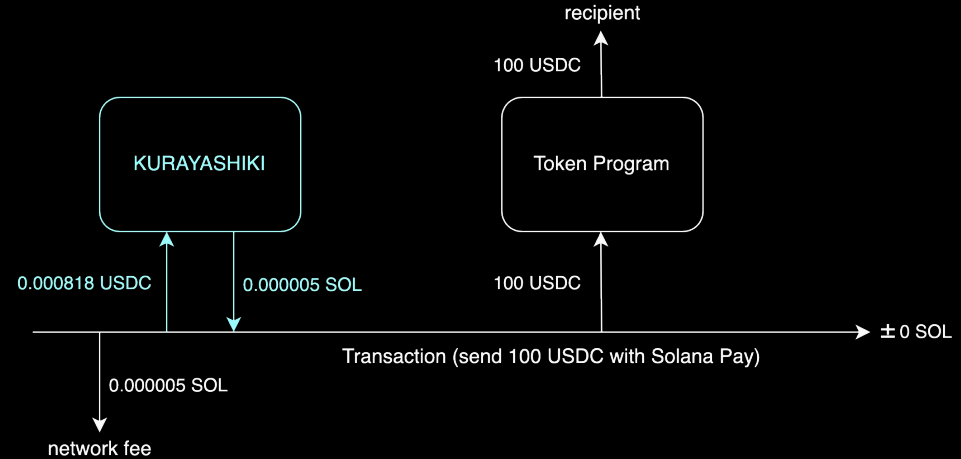
# KURAYASHIKI

Pay Network fee with Stablecoin

make Solana Pay easier  
for users living in countries with complex capital gains taxation.

# Basic Idea & Pain point to solve

- Network fees must be paid with chain's native token. SOL is used in Solana.
- Users living in countries where capital gains taxation is confusing face major tax filing problems when using Crypto for payments.
- Using stablecoins such as USDC in Solana pay alleviates the problem, but user still pay network fee in SOL.
- Our product, KURAYASHIKI, exchanges very small amounts of stablecoins such as USDC for SOL, which is used as a network fee. Therefore, SOL balance will not change before and after transaction.
- KURAYASHIKI can be used by inserting one instruction into a transaction, so it can be embedded into various products.



# Transaction sample

- This transaction is a transfer of 1 USDC on Devnet.
- Additional 0.000818 USDC was paid as a network fee.
- SOL balance in the payer wallet (6bEe .... Df1A) has not changed before and after the transaction.

The screenshot shows the 'Transaction Details' page on Solscan, specifically the 'SOL Balance Change' tab. The table lists the SOL balance for various addresses before and after the transaction. The payer's address (6bEe5o2h32izob7z5i6zvUMP1HW438DXqVHmrC7Df1A) is highlighted with a red box, showing a balance of 11.156719327 SOL both before and after the transaction. Other addresses listed include 6oLbFkBEqSMPGjWaxgRWqK6gbbC3kchFHipHtyxW7Ny, Aaws1atMoV4XZqT3p9LBCjGHfh4pES8ZUARM2z3CM3gF, and KURAYASHIKI's address (Ajtir4Yg9g8uT2yxwM3MZV1JzyeBGPu7azw2ZfnUgBR), which shows a decrease in SOL balance from 0.099965 to 0.09996.

Address	Balance Before (SOL)	Balance After (SOL)	Change (SOL)
payer 6bEe5o2h32izob7z5i6zvUMP1HW438DXqVHmrC7Df1A	11.156719327	11.156719327	0
6oLbFkBEqSMPGjWaxgRWqK6gbbC3kchFHipHtyxW7Ny	0.00203928	0.00203928	0
Aaws1atMoV4XZqT3p9LBCjGHfh4pES8ZUARM2z3CM3gF	0.00203928	0.00203928	0
KURAYASHIKI Ajtir4Yg9g8uT2yxwM3MZV1JzyeBGPu7azw2ZfnUgBR	0.099965	0.09996	-0.000005 ↓

## View on Solscan

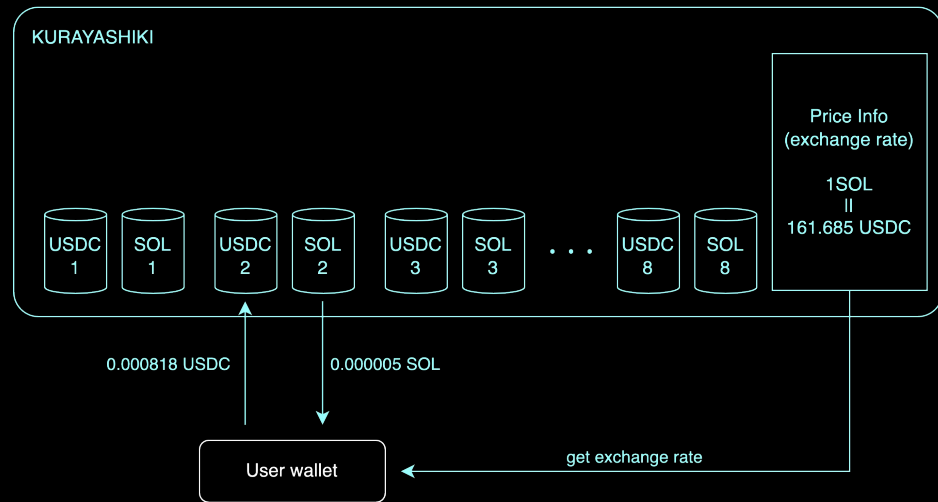
( <https://solscan.io/tx/5UHiGddXRG .... BbBLsN2S5W?cluster=devnet> )

The screenshot shows the 'Transaction Details' page on Solscan, specifically the 'Token Balance Change' tab. The table lists the token balance for various addresses before and after the transaction. The payer's address (Aaws1atMoV4XZqT3p9LBCjGHfh4pES8ZUARM2z3CM3gF) is highlighted with a red box, showing a decrease in token balance from 99 to 97.999182. Other addresses listed include 6oLbFkBEqSMPGjWaxgRWqK6gbbC3kchFHipHtyxW7Ny, KURAYASHIKI's address (EDjdnNyA1rpmqyKC93ntd9Rfy3c9JaacRk8UaQZYz2), and the receiver's address (EDjdnNyA1rpmqyKC93ntd9Rfy3c9JaacRk8UaQZYz2), which shows an increase in token balance from 1 to 2.

Address	Balance Before	Balance After	Change	Token
KURAYASHIKI 6oLbFkBEqSMPGjWaxgRWqK6gbbC3kchFHipHtyxW7Ny	0.004899	0.005717	0.000818 ↑	FMwbjM...
payer Aaws1atMoV4XZqT3p9LBCjGHfh4pES8ZUARM2z3CM3gF	99	97.999182	-1.000818 ↓	FMwbjM...
receiver EDjdnNyA1rpmqyKC93ntd9Rfy3c9JaacRk8UaQZYz2	2,919.822262	2,920.822262	1 ↑	FMwbjM...

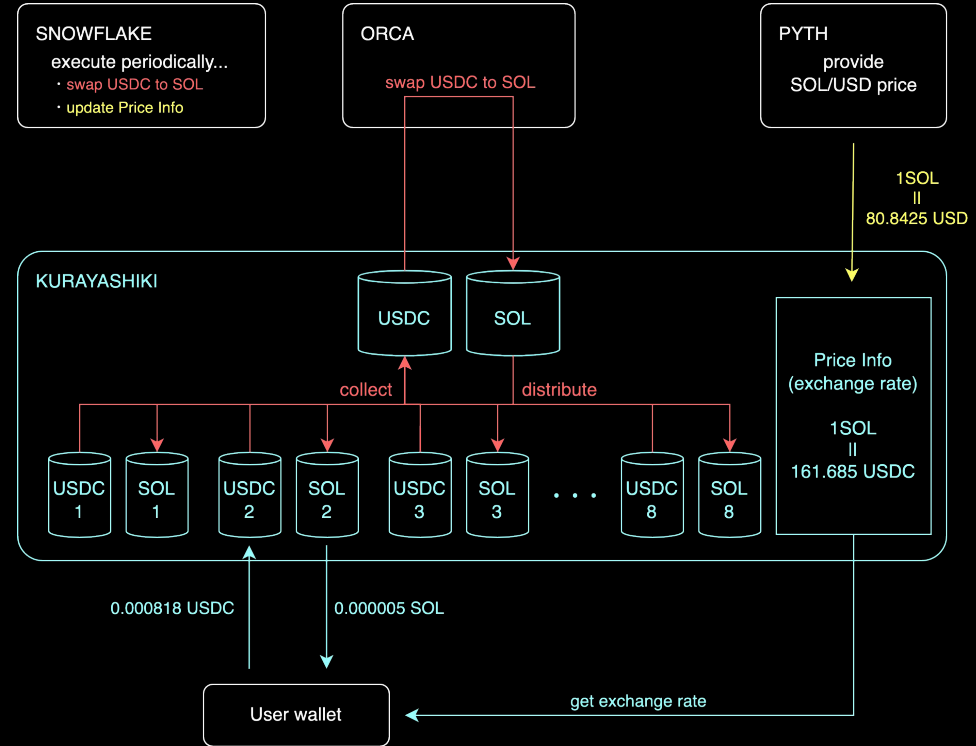
# Front-end Architecture

- KURAYASHIKI has one price info account and 8 pairs of USDC and SOL deposit.
- User randomly select one pair of USDC and SOL deposit, and exchange a little USDC to SOL to pay network fee.
- KURAYASHIKI exchanges USDC for SOL using a fixed exchange rate for a period of time. The reason for using a fixed exchange rate is primarily to not sacrifice Solana's parallelism. A typical AMM exchange locks the account for the deposit, so the swap operations are always serialized.
- Users send USDC to USDC deposit and receive SOL from SOL deposit directly. There are no Wrapped SOL related operations, and so compute units can be saved.



# Back-end Architecture

- The fixed rate is updated once a day, but adopting a fixed rate has the disadvantage that the service provider bears the risk of price fluctuations. Therefore, the fixed rate uses double rate of the SOL/USD price on the market. This may seem like a crazy rate, but network fees are very cheap in Solana, so double network fees are also very cheap.
- The collected USDC are collectively swapped to SOL by Orca every hour and filled into the SOL deposit.
- Updating the price info account and swapping USDC to SOL is done automatically by using SNOWFLAKE.



# Demo on Devnet

- KURAYASHIKI have been already deployed on Devnet.
- You can try to send 1 USDC with KURAYASHIKI and without KURAYASHIKI respectively.
- Prepare a temporary wallet for test and Phantom.
- All required tokens including SOL can be received by airdrop on the page. We hope you feel free to try it 😊

## KURAYASHIKI Demo

( [https://everlastingsong.github.io/kurayashiki/kurayashiki\\_demo.html](https://everlastingsong.github.io/kurayashiki/kurayashiki_demo.html) )



## KURAYASHIKI Demo

### Requirement

- Network is Devnet
- Phantom wallet is required

### Demo Instruction

1. click "Connect Phantom wallet" to connect wallet.
2. click "Airdrop SOL" if your balance of SOL is less than 1 SOL.
3. click "Airdrop tokens" to get a little USDC and KURA tokens.
4. click "Send 1 USDC" to send 1 USDC, then check Pre/Post Tx difference.
5. click "Send 1 USDC with KURAYASHIKI" to send 1 USDC again, then check Pre/Post Tx difference.
6. click "Send 5 KURA" to send 5 KURA, then check Pre/Post Tx difference.
7. click "Send 5 KURA with KURAYASHIKI" to send 5 KURA again, then check Pre/Post Tx difference.

📄 check Tx log on Solscan or Solana Explorer if needed.

### Command

[Connect Phantom wallet](#) [Airdrop SOL](#) [Airdrop tokens](#) [Update balance](#)

#### send USDC token

[Send 1 USDC](#) [Send 1 USDC with KURAYASHIKI](#)

#### send KURA token

[Send 5 KURA](#) [Send 5 KURA with KURAYASHIKI](#)

[send 1 USDC with KURAYASHIKI done.](#)

Tx: 5UHGdsXRQj2DGvZ5d8DwEbiIPRDkuZYVGmeFFMYD7zmeXMrLwuxMABUpGxb5B17q9CuxH7NofBBuLaN255W 🔍

### Wallet balance

PublicKey: 6bEe...Df1A

SOL / Token	Balance	Pre/Post Tx difference
SOL	11.156719327	0.0
USDC	97.999182	-1.000818
KURA	100.0	0.0

# Future development ideas

- Provide NPM package as a library.
- Support more stablecoins other than USDC.
- Compensation for network fees in case of transaction failure.
- Reduce compute units consumption by KURAYASHIKI.
- Issuance of dedicated stablecoins to pay network fees.
- Prepaid network fees.



# What is “Kurayashiki”

“Kurayashiki” is a large warehouse set up in Osaka, Tokyo and Kyoto during the Edo period in Japan, where are convenient financial areas for samurai to sell local special goods to earn money. Local special goods were such as rice, beans, miso, iron, paper and so on.

It was inspired by the large number of deposits lined up.





# Resource Link



Product page

<https://kurayashiki.jimdosite.com/>



GitHub repo

<https://github.com/everlastingsong/kurayashiki>



Demo

[https://everlastingsong.github.io/kurayashiki/kurayashiki\\_demo.html](https://everlastingsong.github.io/kurayashiki/kurayashiki_demo.html)



**Thank you for your interest !**

