PPSwap: A Peer-to-Peer token swap, mining, and automated reward distribution protocol (V10)

The PPSwap team
Last update: 8/5/2021
Created on: 5/1/2021

Overview: PPSwap (PPS) is an Ethereum token that powers PPSwap, a peer-to-peer protocol that is designed to support very low swap fees and secure swap of any two ERC20 tokens directly between two wallets. Unlike existing DEXes, liquidity pools are not used in PPSWap, which provides PPSwap the unique opportunity to dramatically reduce swap fees and improve security. PPSwap enables a user to mine PPS tokens by swapping arbitrary two ERC20 tokens using PPSwap. Moreover, users can earn rewards simply by holding PPS tokens and watch their balances grow in real-time, as rewards are distributed to all existing holders pro rata immediately after each swap transaction. PPS token are fully community-driven and there are no dev tokens. All PPS tokens are locked in the smart contract for being disseminated to the public in a fair and square manner.

Problem: First, traditional centralized exchanges of cryptos require users to give their digital tokens under the custody of the exchanges to be able to trade, as a result, they have a long history of being the target of theft by many attackers. Recent decentralized exchanges (DEXes) improve the security and privacy of token swaps by allowing users to be the custodians of their own digital assets in their personal wallets. However, in order to facilitate immediate swap of two tokens, liquidity pools are introduced to play the role of automated money makers (AMMs). A liquidity pool provider put both token A and token B into the pool in order to facilitate the swap of these two tokens. Unfortunately, these liquidity pools often become the target of price manipulation and cyberattacks. For example, on May 19, 2021, PancakeSwap suffered from a flash loan attack, causing their native token, Bunny, to crash over 95%. It is estimated that the attacker profited around $5M from the attack [1]. On May 27, 2021, BurgerSwap lost 7.2M as a result of another flash loan attack [2]. Therefore, although the DEX model is very appealing to many users, the vulnerability of the liquidity pools is still a serious issue.

Second, although traders at centralized exchanges might enjoy the saving of gas fees, the transaction fees are still very high. For example, in Coinbase, fees vary based on the amount of a transaction. For a transaction of $50-$200, the charge would be $2.99. Coinbase charges 1.49% of the total transaction or a fixed fee, whichever is greater. Meanwhile, the swap fees for existing DEXes are prohibitive, in the range of 0.25%-1.0% due to the cost of liquidity pools [3, 4]. That is, to swap $10,000 worth of tokens, one needs to pay $25-$100, plus gas fees. This swap fees are necessary for these DEXes to work as the swap fees are the incentives for liquidity pool providers to put sufficient tokens into the liquidity pools as automated market makers (AMMs).

Finally, due to the cost of market makers, both traditional centralized exchanges and DEXes support only limited pairs of tokens. In the case of DEXes, liquidity pool providers are driven by

the profit of swap fees, so the support of liquidity pool for small tokens (tokens that have very small market cap or are just initiated) is very poor, leading to either very poor user experience, including dramatic price change for each swap or to a total failure of swap due to not sufficient liquidity pool.

In summary, existing exchanges suffer from the following issues:

1) Custodial wallets and liquidity pools are often the targets for cyberattacks.
2) The swap fees for existing DEXes are very high due to the cost of liquidity pools.
3) Existing centralized or decentralized exchanges only support a limited list of pairs of tokens. Small tokens are often not supported or supported poorly due to lack of market makers or liquidity pool providers since the support of small tokens is less profitable.

PPSwap is designed to address all the above three issues and support secure and cheap swap of any two ERC20 tokens directly between two wallets, which is illustrated below:
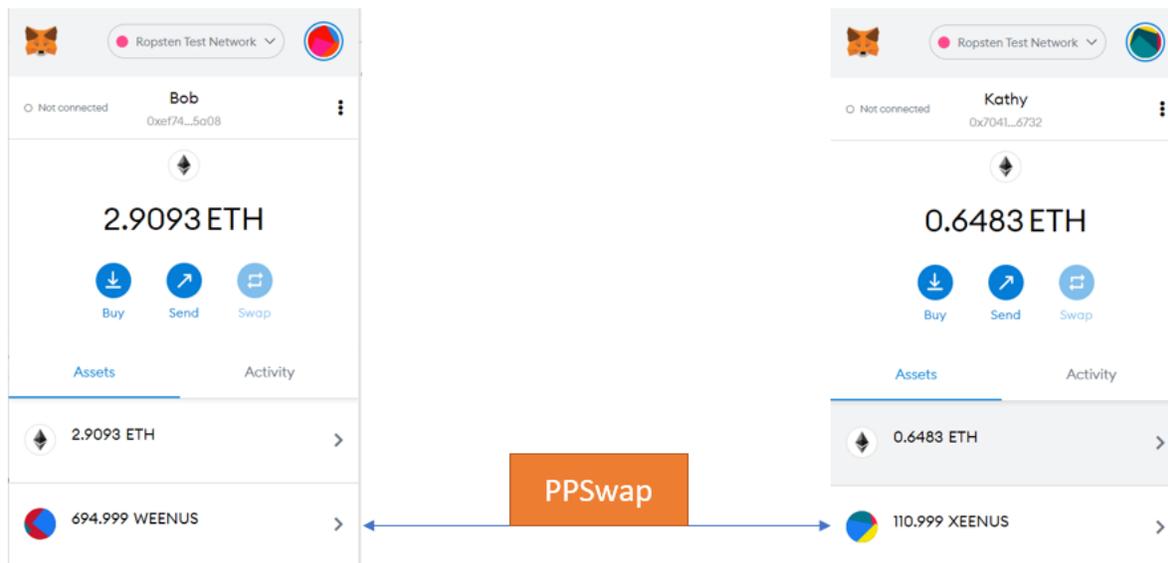
Solution: PPSwap, as a DEX, addresses the above issues by combing the best features of centralized exchanges and those of decentralized exchanges. Liquidity pools are eliminated, and the PPSwap protocol works as follows and illustrated in the next figure:

1) Bot approves the Weenus contract to spend amtA of Weenus on his behalf.
2) Bob makes an offer into the PPSwap contract: he likes to exchange amtA of Weenus for amtB of Xeenus;
3) Kathy approves the Xeenus contract to spend amtB of Xeenus on her behalf.
4) Kathy accepts the offer made by Bob via PPSwap, which executes an atomic swap: Bob receives amtB of Xeenus from Kathy and Kathy receives amtA of Weenus from Bob. Atomicity is ensured - either both will succeed, or none will succeed.
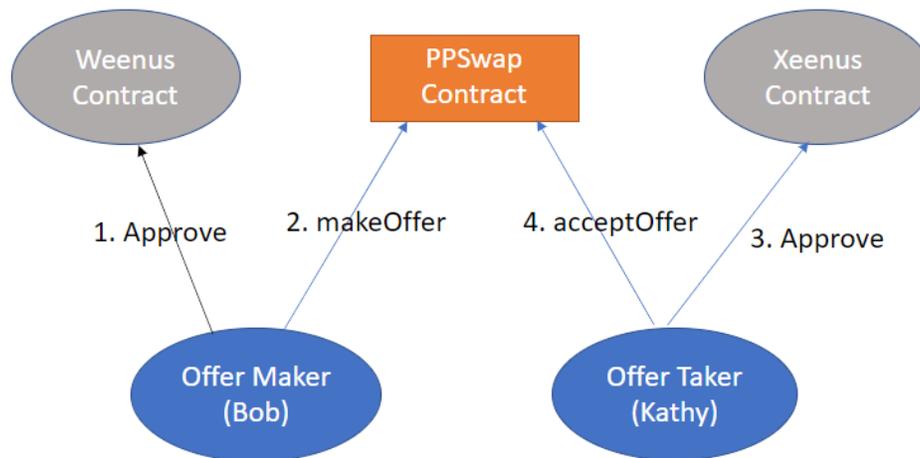
In particular, PPSwap can support all pairs of ERC20 tokens, including small tokens. This is possible because no market makers or liquidity pools are needed in PPSwap. A search engine will be developed to support the discovery of all pending offers to facilitate the exchanges. PPSwap can dramatically reduce the swap fees since no liquidity pools exist in PPSwap. As PPSwap supports direct wallet-to-wallet exchange of tokens, to our best knowledge, this is the most secure token swap protocol in the market. No centralized control, no middleman, permissionless, private exchange of tokens, all in the control of PPSwap participants.

Business model: PPSwap will put 100% PPS coins in the smart contract, so not even the development team would hold any PPS coins. PPS are released to the market in two ways. One can buy and sell PPS via the buy and sell functions of the PPSwap smart contract. The PPSwap smart contract ensures the price of PPS will increase slowly and monotonically at the market of the PPSwap smart contract, but not the price of PPS at other markets, such as uniswap. In addition, PPS will be rewarded to both offer makers and all existing PPS holders with a schedule listed in the following table. For each swap transaction, half of the rewards will be given to the offer maker, and the other half will be distributed to all existing PPS holders in a pro rata fashion. As one can see, the first 1000 offer makers are very lucky as they will receive a tremendous amount of PPS. We will promote the first 1000 PPS holders in many innovative ways.

PPSwap will charge a swap fee based on the following table. No swap fee will be changed for the first 1000 swap offers. There will be no swap fee for 10M PPS holders, 0.0005 eth for 1M PPS holders, and 0.001 eth for non PPS holders or PPS holders whose PPS balances < 1M.

# of swaps	Rewards for offer maker	Rewards for all holders	Transaction fee
<= 1,000	10,000,000 PPS	10,000,000 PPS	0 eth
<= 10,000	1,000,000 PPS	1,000,000 PPS	0/0.0005/0.001 eth
<= 100, 000	100,000 PPS	100,000 PPS	0/0.0005/0.001 eth
<= 1M	10,000 PPS	10,000 PPS	0/0.0005/0.001 eth
> 1M	0	0	0/0.0005/0.001 eth

Transaction fees: 1) 0 eth for 10M PPS holders or the first 1000 offer takers,
2) 0.0005 eth for 1M PPS holders,
3) 0.001 for < 1M PPS holders.

In summary, PPSwap has the following features:

1. **Low swap fee**: 0, 0.0005 or 0.001 eth.
2. **Free PPS mining**: An offer maker can earn PPS rewards.
3. **Automated reward farming (reflection) :** for each swap transaction, certain PPS will be distributed to all existing PPS holders.
4. **Community-driven:** no dev tokens, all tokens are locked in the smart contract initially.

Tokenomics: Total supply: 1,000,000,000,000 PPS, Max supply: 1,000,000,000,000 PPS, Circulating supply: 0 PPS initially. See below.

PPSwap (PPS) tokenomics				
Token ticker	PPS			
Token name	PPSwap			
Total supply	1,000,000,000,000			
Circulating supply	0			
Distribution of tokens				
Dev Team	0		0%	
Marketing	0		0%	
Advisors	0		0%	
Pre-sale	0		0%	
Crowdsale	0		0%	

Trust account: a trust account will be created such that all swap fees and a 4% sales tax of PPS tokens (ONLY for selling PPS tokens back to the PPSwap contract) will be deposited into the trust account. The trust account is necessary for the continuous development, maintenance, and marketing of the PPSwap service.

Ownership renouncement: the ownership of the smart contract will be renounced immediately after launch, so the development team has no privilege over the smart contract. The code for the smart contract will be open source for public scrutiny and audit.

Targeted launching date: 1/1/2022 at www.PPSwap.org.

[1] Flash Loan Attack Causes DeFi Token Bunny to Crash Over 95% (yahoo.com) [https://finance.yahoo.com/news/flash-loan-attack-causes-defi-103214021.html, accessible 5/28/2021]

[2] BurgerSwap Explains $7.2 Million Flash Loan Attack in Post-Mortem - Decrypt. [https://decrypt.co/72194/burgerswap-explains-7-2-million-flash-loan-attack-in-post-mortem, accessible on 5/28/2021].

[3] What Is Uniswap? A Complete Beginner's Guide - CoinDesk [https://www.coindesk.com/what-is-uniswap-complete-guide, accessible 5/29/2021]

[4] QuickSwap FAQ. QuickSwap is a fork of the originator… | by QuickSwap | Medium [https://quickswap-layer2.medium.com/welcome-to-quickswap-exchange-93d47e057633, accessible 5/29/2021]