

APY Swap: Decentralized protocol for the decentralised exchange of shares of Tokenized Vaults

Draft

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Abstract

APYSwap is a protocol for the decentralised exchange of shares of Tokenized Vaults. It achieves this through the creation of a Layer 2 blockchain where users can trustlessly swap accounts & assets from multiple Layer 1 blockchains including Ethereum, Polkadot and Binance Smart Chain.

APYSwap simplifies yield farming and reduces its costs for users, without sacrificing decentralisation or self-custody. By allowing the trustless trading of tokenized yields, it also introduces greater liquidity and other novel attractive properties.

With APYSwap, cryptocurrency holders can benefit from passive income without the demands of active portfolio management, whilst active DeFi portfolio managers can trustlessly trade on behalf of users and generate profits without friction or high transaction fees.

1. Introduction

Decentralized finance (DeFi) has shifted the way that cryptocurrency users interact with the protocol. Instead of a novel infrastructure for processing data, blockchain assets for the first time could enjoy currency features like compound interest and decentralized trading. Compared to traditional financial services, DeFi protocols gave back the asset ownership to users rather than intermediaries and created a market that could be trusted by protocol rather than centralized entities. As one of the most mature smart contract platforms, Ethereum currently hosts over 90%¹ of the assets in DeFi.

1.1 Current Problems

The rapidly evolving DeFi ecosystem faces the following problems:

1. Existing DeFi instruments are too complex for the average user, requiring a large amount of specific & up-to-date knowledge such as how to interact with pools, deposit liquidity, & mitigate impermanent loss.
2. It is difficult for users to discriminate between different DeFi projects, and evaluate the potential risks & rewards of each. Moreover, there are multiple blockchains that are providing infrastructure for DeFi applications and that it is difficult to navigate across different blockchains.
3. The DeFi space changes extremely fast, meaning portfolios require constant supervision to maximise profits. It is hard for users to keep track of what opportunities are present or have finished (for example, Sushiswap and Uniswap reward pools regularly change²) Liquidity Provider (“LP”) and Yield farming (“YF”) tokens lack liquid markets and divisibility.
4. Ethereum transaction fees have grown increasingly high, meaning it is prohibitively expensive for regular users to interact with yield farming opportunities and other Dapps³.

1.2 Solutions: delegation as a way to increase composability

To solve the problem, APY Swap implemented a delegation function for user assets and created a marketplace for trading these financial assets. APYSwap allows users on multiple blockchains - initially Ethereum, Polkadot and Binance Smart Chain - to create & control vaults on their native blockchain, which they can transfer ownership of to third parties. This allows users to have the option to enjoy financial services without sacrificing the ownership of their assets.

2. APY Swap Products

¹ Find source

² See, for example: <https://www.coindesk.com/uniswap-rewards-sushiswap-angles-catch-yield-farmers>

³ See https://ycharts.com/indicators/ethereum_average_transaction_fee

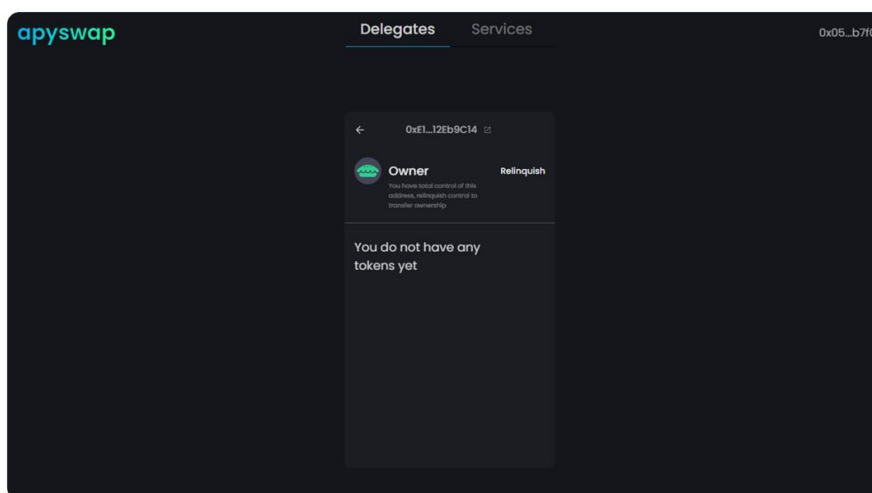
APYSwap consists of three layers: the protocol and smart contracts, the layer 2 aggregation marketplace as well as the user wallet on the top layer. By supporting multiple DeFi protocols, it offers a simple and effective user experience for selecting asset management options. Portfolio managers could even use these tools to design innovative fund structures and product offerings without having to deal with the smart contract layer programming.

2.1 APYSwap Vault Contracts

Vault is a smart contract managing access to its funds and functionality to other blockchain agents depending on their share ownership of the vault. Tokenization is a process of splitting ownership of a vault between multiple agents. These vaults with multiple ownership and easy peer-to-peer transferability (which we call ‘APYSwap Vaults’) enable active DeFi portfolio managers to create specific combinations of LP, YF and other tokens, as well as other synthetic instruments, and transfer divisible shares of such portfolios to third parties.

As users can trade shares of APYSwap Vaults, rather than having to sell the constituent assets within the vaults, APYSwap enables trading of assets that remain locked by staking / lending / pooling. In this way, APYSwap introduces liquidity to previously illiquid assets, without forfeiting any of the rewards or suffering any of the penalties that many projects tie to lock-up periods.

APYSwap Vaults can also interact with any trustless services on the Ethereum, Polkadot and Binance Smart Chain networks that are governed from specific addresses: as such, they can partake in governance and other functions. APYSwap Vaults are therefore much more flexible than index funds or other asset baskets; instead they are akin to decentralised trading funds, with full composability with a range of blocks in the ‘DeFi lego box’.



2.2 Layer 2 Bridge and Token Swap

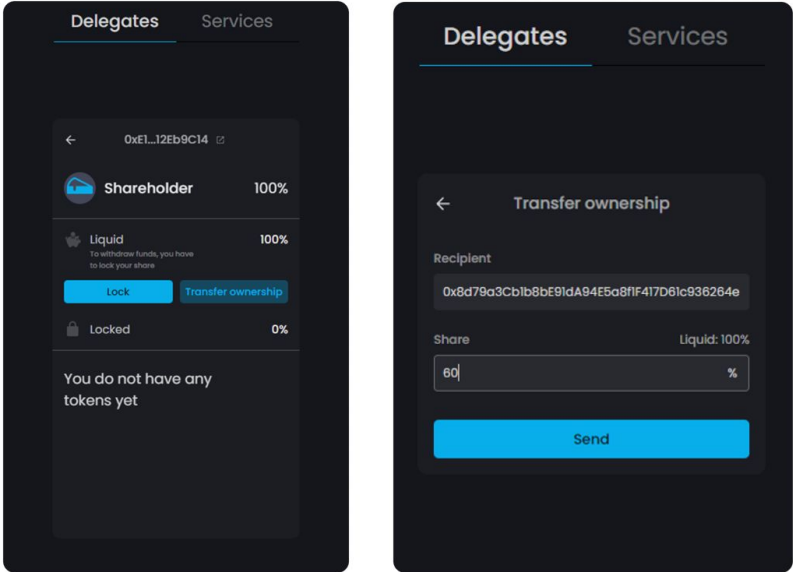
To minimise Ethereum gas costs and block congestion, users can use Polkadot, Binance Smart Chain or Chromia blockchains as Layer 2 networks to transfer or trade shares in APYSwap Vaults, with the assets themselves anchored in the Ethereum network. A Uniswap-style exchange, using pooled assets & automated market makers, where users can exchange between tokens on Chromia layer 2, without the high gas fees and transaction times of Ethereum. In the meantime, a trustless bridge allowing the transfer of assets to and from the Chromia Layer 2 blockchain. This will either be built by the APYSwap team or in collaboration with Chromia as additional functionality to their existing bridges.

2.3 Layer 2 APYSwap Vault Marketplace

The APYSwap Marketplace is where the different portfolio trading will happen, and is being built for users to trade their shares of APYSwap Vaults - which can contain a mix of LP, YF and other tokens on the Ethereum blockchain - with no friction, intermediaries, or costly Ethereum gas fees. It will comprise smart contracts, a regular backend and a web application to enable users to trade shares in APYSwap Vaults. Orderbook and matching will be done on-chain, with users signing transactions via APY Mask.

2.4 APY Mask

A Metamask-style web wallet to interact with DeFi apps through APYSwap Vaults. Users can interact through this interface with the functions offered by APYVaults (e.g creating and managing Vaults, and transferring their ownership etc.). Through APYMask, users will be able to manage and sign APYSwap Vault transactions using Layer 2 Chromia accounts, using the same familiar Metamask-style UI.



2.5 Portfolio Rebalancer

An on-chain or hybrid solution where users delegate control of their shares to the rebalancing contract, choose a rebalancing strategy and allow their portfolio to be automatically managed on their behalf.

2.6 Governance Layer

A set of smart contracts and accompanying Web UI for users to govern protocol changes. This will include voting on issues such as new services to be added to the ecosystem, the whitelisting or blacklisting of supported DeFi projects supported etc. Users can login via APY Mask and vote with their APY token balance.

3. Use Cases

APYSwap is targeted towards two groups of users — experienced crypto traders that wish to create portfolios and crypto asset holders that could purchase these portfolios and receive passive income.

3.1 Financial product issuance

APY Swap provides crypto portfolio managers with a wide range of tools to design financial products without having to take care of technical development or end-user experience. At the vault level, APY Swap could easily support popular DeFi protocols on Ethereum, Polkadot and Binance Smart Chain, making it easy for portfolio managers to use the protocols that they are familiar with. From the user experience perspective, once these products are designed, they could get access and volume through the APY Marketplace where users could delegate their assets. For example, by leveraging lending protocols, portfolio managers could create a DeFi index fund that also generates dividends.

3.2 Delegated asset management

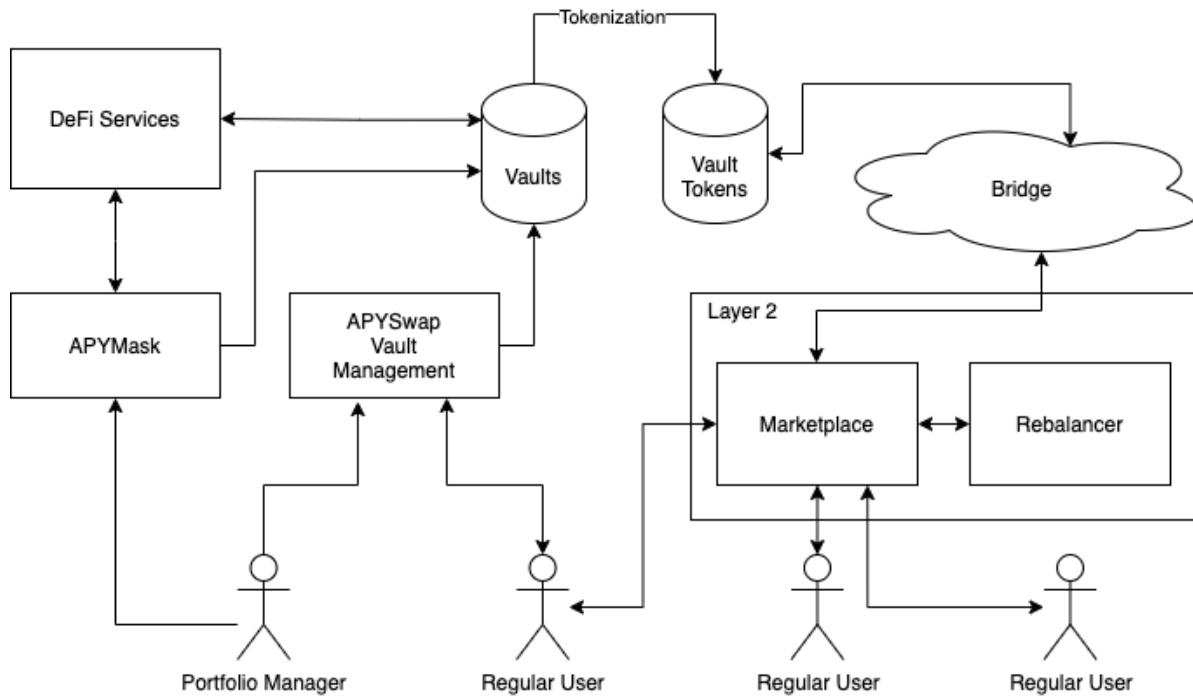
Currently, DeFi offers a wide variety of products for users to manage their crypto holdings ranging from lending, liquidity protocols to derivatives. For a typical crypto investor, it is time-consuming to keep track of the services available in the market, let alone studying and scrutinizing the mechanism of each protocol. Compared to the ease of purchasing an investment portfolio in the fiat world, crypto is currently still not for the mass public due to its technical entry barrier. With APY Swap, we want to recreate the user experience of traditional FinTech without sacrificing the decentralized ownership of assets.

3.3 Delegated governance

As more and more protocols are decentralizing the governance process through evaluating proposals and voting, incentive mechanisms are implemented to encourage participation in these governance processes. Token holders could use APYSwap and delegate this voting power in return for token rewards.

4. Technical Architecture

4.1 User journey



4.2 Cross-Chain Composability

As there are multiple base layer blockchains that offer DeFi services, we implemented cross-chain support for Ethereum, Polkadot and Binance Smart Chain; in the future, as more public blockchains support DeFi applications, we could expand the support for these ecosystems as well. For Ethereum and Binance Smart Chain, the cross-chain support is currently implemented using layer 2 protocols as a bridge. After different vaults are generated, they will be listed on the layer 2 marketplace for trading and then registered on the initial public chain. In the case of Polkadot, as more parachains are supporting smart contracts, we could make use of virtual machines that are compatible with Ethereum-based smart contracts to connect with the Polkadot ecosystem. Since most of the assets are issued on Ethereum at the moment, we believe that this is the most effective way to ensure performance and cost.

5. APY Token

There is a total token supply of 100,000,000 APYSwap tokens. APYSwap tokens are used for governance of the APYSwap ecosystem.

When a DeFi project seeks to be whitelisted on APYSwap, meaning portfolio managers are able to add its LP/YF tokens to APYSwap Vaults, a threshold of APYswap tokens need to be staked to the insurance pool as well as committed by user votes. Projects who are interested in being traded on the platform are incentivised to acquire APY tokens, in order to be whitelisted.

5.1 Insurance Pool by Token Holders

The insurance pool works to ensure that only reputable DeFi projects are available on the marketplace. While the initial whitelist will be created by the development team, thereafter the decentralised community will be responsible for managing this responsibility.

If a project is deemed to fall below the standards expected, the tokens locked in the insurance pool would be distributed to all of the participants who own part of its LP tokens in APYSwap Vaults. Projects will stake tokens to propose themselves for inclusion in the whitelist, with token holders voting on the proposal. This is re-evaluated periodically, with projects delisted when lacking sufficient community support for inclusion.

5.2 APY Token for Fee Reduction

Fees (to be set by the community) are charged upon withdrawals from APYSwap Vaults, determined by the share of liquidity withdrawn. APYSwap tokens can be used to pay reduced fees to the portfolio managers of APYSwap Vaults.

Oracles are used within the APYSwap ecosystem to determine the current prices of shares of the APYSwap Vault, and the pool of assets within them. The oracles may receive a fee in APY tokens as reward for honest reporting, with users in turn staking their tokens to vote for honest oracle selection. Subject to legal clarification, users may earn a revenue share after each transaction.

5.3 Governance: Activity & Time Weighted Proof of Importance

When voting, the value of a token's vote will be determined not only by its numerical weight, but also by the historic voting activity of its owner, as well as the length it has been held by the owner. This incentivises users to participate in voting regularly, and rewards the most active members of the community who have the most understanding of the protocol's needs. It also incentivises long-term participation, as long term holders will be rewarded with greater voting power.

6. Roadmap

Q1 2021: Proof-of-concept - we have already created and are beta-testing the APYSwap Vault concept both in Ethereum and Binance Smart Chain. Much remains to be done to deliver to our users the final vision of the marketplace where LP tokens can be combined into portfolios, managed and freely traded on layer 2 blockchains whilst assets remain anchored in Ethereum.

Q2 2021: APYSwap Beta - finished APYSwap Vaults, APYMask, the Layer 2 bridge with our strategic partner Chromia tailored specifically for our users, and a basic version of Layer 2 Vault trading platform. Marketplace rules under research. Portfolio evaluation by the oracles under research, as well as project governance based on token staking.

Q3 2021: APYSwap + Governance ecosystem; Layer 2 token trading and additional features, such as the auto purchase of APY token for paying fees.

Q4 2021: APYSwap automatic portfolio rebalancing