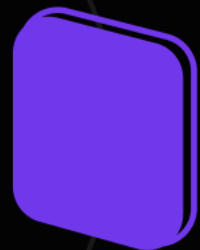




Litepaper

v1.0



Vision

We're shaping the future of how people interact with financial systems built on decentralized, fair, and universally accessible technology.

Mission

To empower users of all levels by building a cross-chain infrastructure service that offers a simple, efficient, and secure way to trade, invest, and transact within DeFi.

Overview

DeFi is the very foundation upon which a fair, trustless and inclusive global economy is being built. Our purpose is to contribute to building this financial system, more specifically shaping how users trade, invest or transact.

Magpie protocol is a cross-chain liquidity aggregator that enables seamless cross-chain swaps with near-instant finality and cost efficiency on many of the top blockchains, all **without** the need to bridge any assets, making for an extremely fast, secure, easy, and gas efficient solution.

Magpie protocol incorporates a unique technical implementation that allows execution of cross-chain swaps without the need for the user to bridge assets from any of the top bridges. This saves time and cost by reducing the complexity and security risks involved in using any of the bridging solutions to move assets across chains.

Compared to other options in DeFi, when a user swaps using Magpie, they **don't** need to go to the corresponding bridge, learn how to use it, spend a bunch of gas on transfers and time waiting, only to then have to go back to the DEX to

make a swap. While in some ways similar to 0x, Paraswap, and 1inch, the advantage of Magpie comes in its user experience, security, ease-of-use, and speed, all while providing users with the best prices on tokens both within-chain and cross-chain.

Problems in DeFi

DeFi solves a lot of issues, but that doesn't mean it isn't without its problems. Currently, there are no options out there for a permissionless, non-custodial, chain-agnostic cross-chain swap solution in which users are free to cross-chain swap or bridge any asset they wish with the same wallet.

Liquidity aggregation is one of the hottest topics in the space as TVL (Total Value Locked) over the last two years increased by over one hundred times. While this is great, the problem is that it's fragmented with liquidity spread across ten chains and then hundreds of exchanges within those chains. This leads to capital inefficiency and higher costs to users, in both gas and time, with no fast and efficient way to bridge and cross-chain swap their assets.

At the beginning of May 2022, 55% of TVL was on Ethereum, with that 45% remaining being spread mostly between about ten chains, but roughly 60 more have tens of millions in liquidity. This causes quite the fracture between blockchains and exchanges for users to find what they want, quickly, and for a good price. It even becomes an issue within the same chain, liquidity spread across ten or even fifty exchanges, creating a need for users to use bridges, liquidity, and DEX aggregators to find the token and price they want.

Bridges are most often not enough of a solution by themselves as after using a bridge, users need a DEX or DEX aggregator to complete the swap as bridges are limited to stablecoins and native currencies, while Magpie is not. There are too many bridges to be educated on, each with their own unique user interface,

limitations, system to learn, and time to bridge. Some apps (DEXs) or liquidity aggregators link to seven or more bridges, each for a different chain, that users would need to learn, navigate, use, and possibly need a new wallet for. These apps allow deposits from a single chain only, forcing users to leave the app to bridge their funds, having to do a lot of hard work, paying a lot of gas fees, all just to be able to use the previous app (DEX). In order to purchase assets on the new chain, users need that chain's native token, ex. ETH, in order to complete any swaps on the destination chain, meaning users have to first purchase and bridge the native token and trade it for the token they want, adding another layer of complexity to the process.

Another major challenge in DeFi is that of Bridge security. By using bridges, users are entrusting their tokens with the security of the bridge, not being able to keep them in their own wallets. This has been the cause of many exploits which have cost users over \$1 billion dollars USD in the last year alone. Magpie helps solve this problem by not actually bridging assets or locking users assets in a smart contract to burn or mint tokens.

Requiring the use of all of these bridges and DEXs also increases the price users are forced to pay and the time spent before they can make the swap for the token they want. Cost and time for approving, swapping, bridging, sending, all leads to opportunities lost, extra fees, and just complicates the process. It's not easy to use and it needs to be. These issues keep a lot of retail users away and discourages many users from within the crypto space from participating in the DeFi ecosystem as well. As prices can differentiate between exchanges and chains, it just exacerbates the issue in finding a place to swap or stake.

The Solution: Magpie Protocol

The easiest and simplest way to describe Magpie Protocol is that it facilitates cross-chain swaps without bridging. Magpie accomplishes this by sending

messages using the generic messaging layer on bridges to initiate and execute a swap across chains.

Rather than requiring users to lock or burn tokens and then mint them on the destination chain, Magpie uses single-asset liquidity pools and the Magpie liquidity aggregation protocol, both deployed on all of the most popular chains, to initiate swaps for the desired token. This results in users receiving their tokens very quickly, for much less gas, and not being limited to swapping stablecoins or the chain's native gas token.

There are four steps to the process:

1. Users select their pair and chain of choice.
2. They initiate the swap on their home chain into a Magpie liquidity pool.
3. Magpie uses the bridges to send a swap instruction message to a relayer on the destination chain; there is no bonding or minting of assets to or from the bridge.
4. The relayer, after confirming the message, sends the chosen asset to the user's wallet on the destination chain.

The following infographic shows the steps involved for the end user while Magpie takes care of the complexities of aggregation and route calculation.

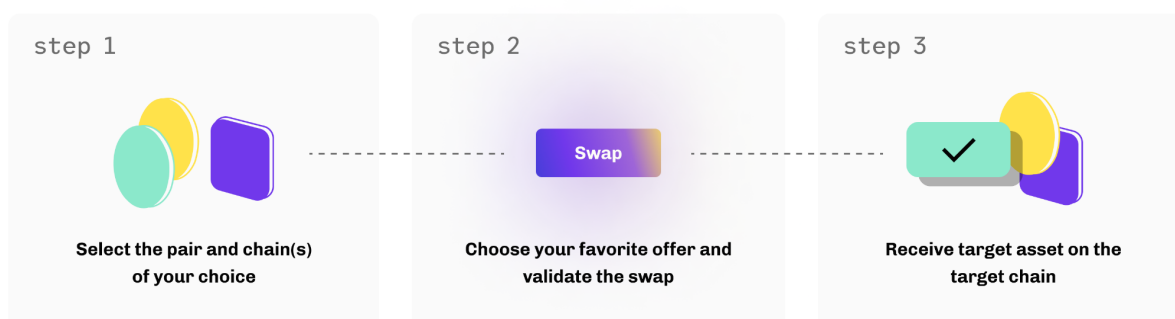
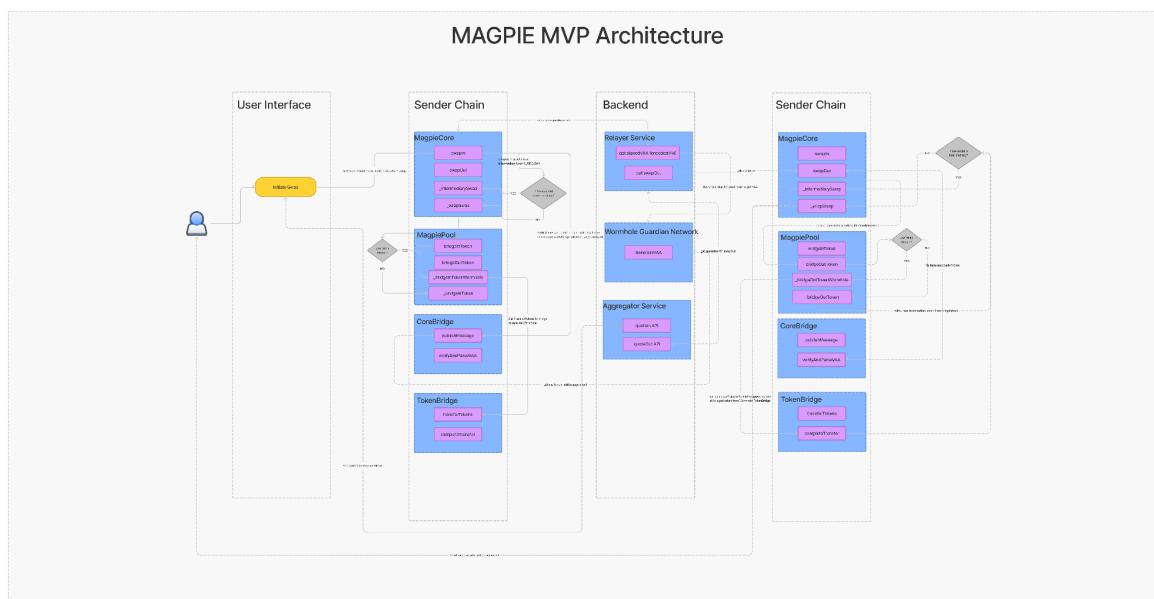


Fig.1: The user-experience is straightforward for the traders.

With that said, let's dive into the following components of Magpie Protocol and how they work: Architecture, Aggregator, Services, Liquidity Pools, and Major Benefits. If you're interested in a more detailed description, follow us on our social media to be alerted as soon as the much more detailed whitepaper is released.

Architecture

The user chooses their pair and chains of choice. Once chosen, a swap is done in MagpieCore to exchange the token for the stablecoin in the Magpie liquidity pool and once this completes, Magpie sends a message through the bridge relayer messaging system, which is then verified by the 19 Guardian Nodes through the Wormhole Guardian Network. Once the verified message reaches quorum, Magpie's receiver chain receives the message and initiates a swap on the destination chain of the stablecoin liquidity for the users token of choice and the tokens are deposited in their wallet. Image below shows the flow of the system.



Aggregator

The Magpie Aggregator calculates paths for swapping from one token to another. It uses an advanced proprietary routing algorithm which finds the most efficient paths for a token swap by splitting the order between different protocols (DEXs) to get the maximum amount of tokens for the user.

Magpie Micro Services

The **Aggregator Service** provides an API endpoint that returns a quotation for a token swap. It calculates the best route to exchange tokens using graph search, based on the data collected by the pool explorer service, which is prioritized based on available liquidity in USD. It performs price impact calculations off-chain based on the collected data in order to find the best deal for the user.

The **Pool Explorer Service** makes sure that our system has all the necessary information from the integrated AMMs on each chain. Accomplishing this in two ways: it subscribes to listen to the pool contract of all the pairs of the AMMs that have been integrated and it updates token reserves of that pool in case of any swap event that it fetches and it gets the pool data from the subgraph of AMMs, and queries the subgraph to get all pairs and their reserve of all the supported AMMs.

The **Token Provider Service** keeps the token list up to date, whenever there is any pool creation event detected by the pool explorer service then token service checks whether there is any new token that needs to be added to the token list and adds new token if it is not present in the token list already. It also collects and stores USD price data for all tokens that are emitted by the aggregator service.

The **User Service** keeps track of user balances and transactions, provides an api that is used by frontend user interface to get user swap transaction status

The **Relayer Service** listens to swappedIn event on all supported chains, it queries wormhole guardian network to get VAA for any swapIn transaction and then it calls swapOut on the target chain

Finally, the **Message Broker** handles the communication between the services.

Liquidity Pools

Magpie Protocol will deploy single-asset liquidity pools on each blockchain on which it operates. As no user assets are being burned and minted using bridges, the stablecoin liquidity pools act as a way for Magpie Protocol's intrachain liquidity aggregator to quickly swap for the token of the users choice.

To start, these liquidity pools will be for stablecoins and eventually include our native token, FLY.

Magpie will have a dynamic bridging fee model that incentivises automatic liquidity pool rebalancing. In this model, the transfer fee is determined by the pool's available liquidity and the supplied liquidity. If available liquidity in the pool is lower than the supplied Liquidity the transfer fee is higher than the normal transfer fee (stable fee), and if available liquidity is higher than the supplied liquidity then the transfer fee is lower than the stable fee. The higher transaction fees are used to incentivise cross-chain transfers from low liquidity pools to high liquidity pools, resulting in self rebalancing pools. Stablecoin liquidity pools are deployed on each chain and liquidity suppliers that provide liquidity to these pools and enjoy LP fees from user transfers.

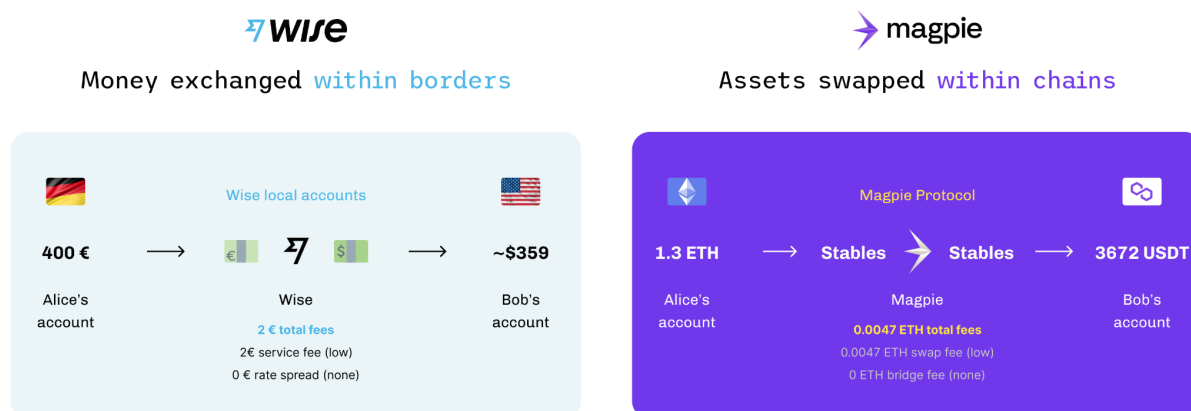


Fig.3: Magpie is doing to DeFi what Wise did to FX.

Token - FLY

Magpie's native token is FLY and will work as a governance token and liquidity token. The fees will be redistributed amongst liquidity providers, FLY stakers,

and operation funds. More detailed information on the tokenomics will be provided in the whitepaper.

Major Benefits of Magpie Protocol

Magpie's chain agnostic nature does not limit it to 0x or other such protocols and can be deployed to and used to *bridge any network to another*.

Magpie is scalable using a smart algorithm and low-cost backend system, resulting in incredibly efficient swaps based on a Wormhole based cross-chain communication and value swap module. This results in lower fees (just one swap fee), lower gas, low slippage, and faster transactions (2 block finality).

Magpie has an incredibly slick user interface that abstracts away all of the complexities of using traditional bridges and multiple AMMs. It's as simple as selecting the current chain, token pair, destination chain, and then swapping.

Want to complete a swap and it happens to not be cross-chain, but within the same chain, use Magpie for it as well! Magpie's Liquidity Aggregation Protocol has been shown in preliminary tests to provide users with better deals than 0x aggregators and is competitive with 1inch.

Magpie works with any asset and is not limited to stablecoins. Unlike most bridge solutions, liquidity for each and every token that users want to swap for is not required as the protocol handles the swaps on each end through the Magpie Liquidity Aggregation Protocol.

Magpie is secure and censorship resistant, as it is non-custodial and uses decentralized stablecoins, not relying on any third-party control and as users don't have to burn or lock their tokens, there is no need for them to trust anyone

else with their assets. Magpie uses 19 Guardian Nodes to verify each and every message sent cross-chain through the Wormhole Guardian Network to make sure the message is secure.

Magpie is more than cross-chain swaps, it solves the existing issues faced by DeFi protocols and developers to build unified and interoperable apps with shared state and liquidity across different chains; it acts as an infrastructure layer that provides protocol interoperability across chains.

Magpie's unique selling point is that it uses bridges to facilitate communication between chains, rather than actually swapping, burning, or minting tokens, instructing relayers to initiate swapps on AMMs on the destination chain, which in turn allows anyone to complete a cross-chain swap without utilizing bridge liquidity.

Find us online

Website: www.magpiefi.xyz

Telegram: <https://t.me/magpieprotocol>

Twitter: <https://twitter.com/magpieprotocol>

Medium: <https://medium.com/@Magpieprotocol>