Warp Finance Gitbook Additions for V2 Components

Warp V2

V2 Overview

Warp Finance's primary goal is to improve the decentralized finance (DeFi) lending space.

Warp V1 set out with the intention to add improved liquidity to the DeFi space and to unlock the value represented by liquidity provisioner (LP) tokens. This was accomplished by facilitating a novel functionality for LP tokens: collateralizing stablecoin loans. This function allows users to effectively gain leverage on their LP tokens, improving their capital efficiency and enabling them to double down on staking and the associated rewards.

Warp V2 intends to both expand upon the capabilities of Warp V1, as well as develop a number of new features to enhance user benefits. The changes coming with Warp V2 are as follows:

- Isolated Lending Pairs
    - Warp V2 introduces user-created lending pools of paired assets. As in traditional lending pools, lending and borrowing can go in either direction. However, a major advantage of these pools (in addition to being customizable by users) is the isolation of risk to each pool. Thus, users are able to participate in the level of risk they are comfortable with, instead of having to share risk across the platform. This also opens up new and exciting opportunities for use cases, in particular the shorting of tokens.
- Uniswap V3 LP Token Compatibility
    - Warp V1 is already Uniswap V2 LP Token compatible. Warp V3 adds acceptance for LP Tokens from Uniswap V3, which are now non-fungible tokens (NFTs). Warp Finance made sure to stay ahead of this transition in order to ensure its platform's continued utility to users, without interruption.
- Cross-Layer, Fully Collateralized Loans
    - With many DeFi projects switching over to Layer 2 of Ethereum, the efficient value transfer across layers 1 and 2 has become an increasingly large problem within the space. Warp resolves this issue with a lending solution that allows users to deposit layer 1 or 2 assets and borrow assets on the other layer. This enables users to avoid the presently lengthy transaction times associated with cross-layer transfers, while also freeing up assets that were previously more or less locked into one layer.
- Partnerships for Accepting New Receipt Tokens & Other Functionalities
    - In addition to accepting Uniswap LP Tokens, Warp has partnered with various decentralized applications (DApps) to accept their receipt tokens as collateral.

These partnerships include Unslashed Finance, Element Finance, and Benchmark Protocol, with the potential for new partnerships to be added as well. These collaborations enable existing users of our partner protocols to gain leverage on the receipt tokens they already have, as well as incentivize additional usage of their platforms. We have also partnered with Archer DAO for noncompliant loan liquidation.

With these additional platform features, Warp strives to actualize its vision of a maximally beneficial DeFi lending ecosystem, in which lending and borrowing digital assets is truly optimized for the user, allowing them to make use of as many of their tokens as possible. In the future, Warp will continue to add and improve its offering, keeping its utility to users at the forefront of its design strategy.

Isolated Lending Pairs

Overview

The Problem

Lending protocols are integral to the continued functioning of the DeFi space. As they facilitate trustless lending and borrowing of digital assets, lending protocols are crucial in yield farming strategies and provide exposure to assets without the need to actually buy them.

The leading projects in crypto lending dominate in terms of total value locked (TVL) but are plagued by large, protocol-inherent problems. They all have set lending pairs and limited assets, meaning that only specific and specified assets can be supplied and borrowed. If we take Maker as an example, users can only borrow DAI. To be fair, there is a reason for this: Aave and Compound are set up so that risk is spread over the whole protocol, meaning that if even one of the assets drops in price substantially, it affects the entire ecosystem.

However, this system of risk distribution ultimately limits a user's options. Under this system, the protocol, rather than the user, is the arbiter of how much risk one can take on and what they can trade.

Goliath protocols also suffer from goliath gas fees and non-specific interest rates. Community members have frequently spoken out against the high gas fees that accumulate with even the smallest of tasks. Interest rates are also illiquid and limited in their range; Compound has a maximum interest rate of 50% and a minimum interest rate which stops before it hits zero.

The Warp Solution

Warp intends to systematically target the major problems that we have identified with these dominant protocols. As both developers and community members, our team is dedicated to building a lending solution that brings a new level of utility and customizability to DeFi. Specifically, Warp will allow users to generate lending pools with a similar structure to liquidity

pools. Any two assets can be paired in this pool. Importantly, users will be able to specify the curve type, layer, pair, and asset type. Lending and borrowing can occur in either direction between these two assets.

In general, Warp's lending pools consist of the following components/attributes:

- A user-generated pairing of two digital assets in an isolated-risk uni-directional lending pool
    - Borrow asset
        - The borrow asset earns interest
    - Collateral asset
        - The collateral asset doesn't earn interest

Benefits

This isolated lending pool infrastructure has many benefits when compared to existing crypto lending protocols. Overall, this means that users will have the ultimate freedom in DeFi loans, helping them maximize capital efficiency and freely carry out value-generating processes within the field.

Risk Isolation

First of all, risk is isolated to specific lending pools, and not spread across the platform. That way, transparency is optimized and users are able to consider the risk level of each pool they enter into, selecting for themselves what they are comfortable with. Further, the isolation of pools enables the margin shorting of any token; as there is the potential for thousands of lending pairs with any particular token, users can go margin short on a large variety of tokens. At present, this function is not widely available, but margin shorting on tokens is highly desired by the community.

Optimization & Customization

Another broad benefit of Warp's lending pools is its dedication to optimizing and customizing all processes. In addition to the capacity for users to create token pairings (regardless of layer or asset type), this also includes our flexible oracles. Specifically, a new oracle can be selected for each pool, allowing for a higher degree of customization. Interest rates are additionally improved in Warp's lending pools, as our platform seeks to optimize supply to borrow rate to avoid utilization hitting 100% and borrowing being deactivated, which has happened to other protocols. We accomplish this by optimizing interest rate in response to utilization, slowly dropping as needed to either reach 0 or until the supply has left or borrowers have arrived, or doing the opposite when utilization goes too high. These parameters will also be customizable for each pool. Finally, our lending pools are optimized for low gas use, unlike most lending and

borrowing protocols in the DeFi space. This keeps our gas prices much lower, specifically optimizing our contracts to reduce the types of assets supplied/borrowed, thus reducing gas.

Shorting of Irregular Coins/Tokens

There are not many ways to short less traded tokens, and with this solution it would unlock the capability for traders to structure their portfolios in innovative ways. The DeFi community has been vocal about their desires for increased ability to margin trade with crypto assets. Now, users will be able bet that an alternative asset is overvalued in addition to betting it will go up.

To short a token, users create a pool with one asset they want to short, and another that they think will remain stable or increase in value. After putting the stable asset in as collateral, the user would borrow the risky asset and directly sell for the stable asset. By the end of the loan, which could be as short as the time for a single block, as in a flash loan, the user would be able to buy the risky asset at a reduced price and make a profit. This process can be repeated to maximize gains or be combined with other DeFi strategies to increase yield.

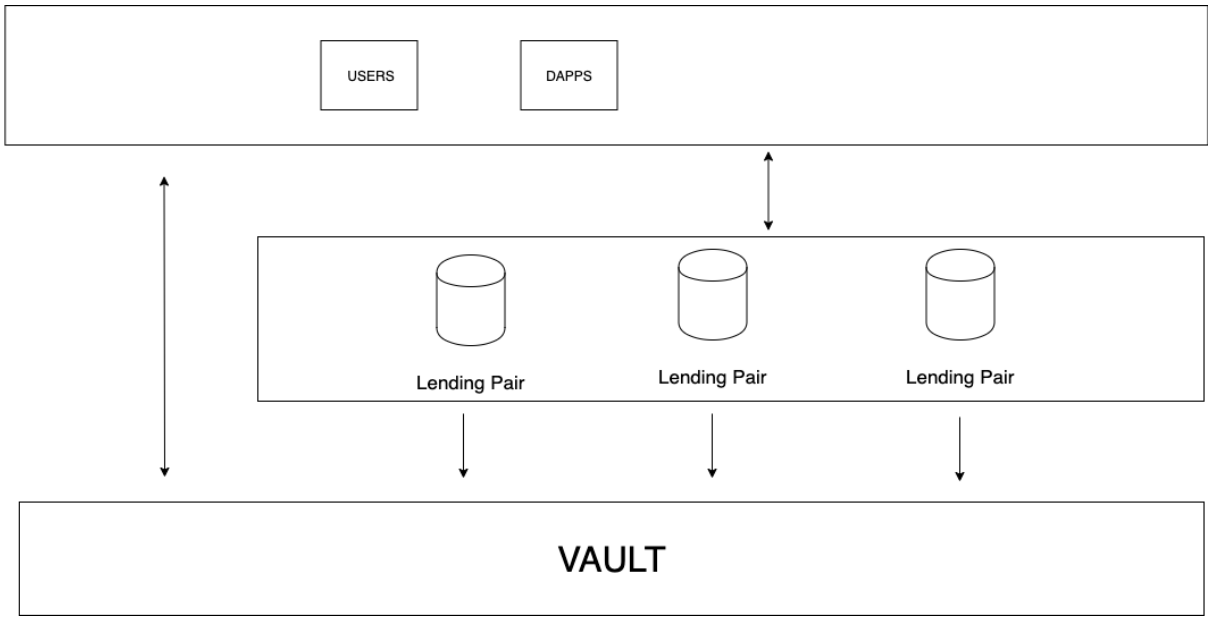
New Warp Governance Capability

Warp token holders will have the ability to vote on new lending pools, given specific parameters and oracle availability. That way, Warp users are more in control of their own financial capabilities than ever.

Lending Pool Components

Overview

An overview of the Warp architecture is depicted below:



Users and DApps are able to deposit into lending pairs, which route to the Warp Vault. From the vault, tokens can be withdrawn by depositors.

Details on the various components of Warp's lending pools are as follows:

Lending Pair

The isolated-risk, customizable lending pairs are a major addition to Warp V2.

These lending pairs can be created by users to involve two digital assets of their choosing. The lending pair is responsible for performing all essential actions in lending, including depositing, borrowing, repayment, and liquidation.

Within these pairs, users can deposit both the collateral asset and the borrow asset. Receipt tokens are then generated to represent these deposits; the receipt token for the collateral asset is used to represent the amount of share of the total collateral asset the user owns, and the receipt token for the borrow asset is used to represent the amount of share of the total borrow asset the user owns. A debt token is also utilized to represent the amount of debt the user has in the system.

For depositing the borrow asset, the user must initially deposit into the pair's respective vault (more about vaults in the following section). Then, the user must whitelist the lending pair they want to use in the vault to enable it to transfer. The user next calls the depositBorrowAsset function on the lending pair once they have whitelisted the contract on the vault, and the lending pair transfers from their account to itself, minting the user a WrappedBorrowAsset token in proportion to the current exchange rate. Subsequently, the user specifies the amount to deposit in the vault in terms of vault shares (with shares also described in more detail in the following section).

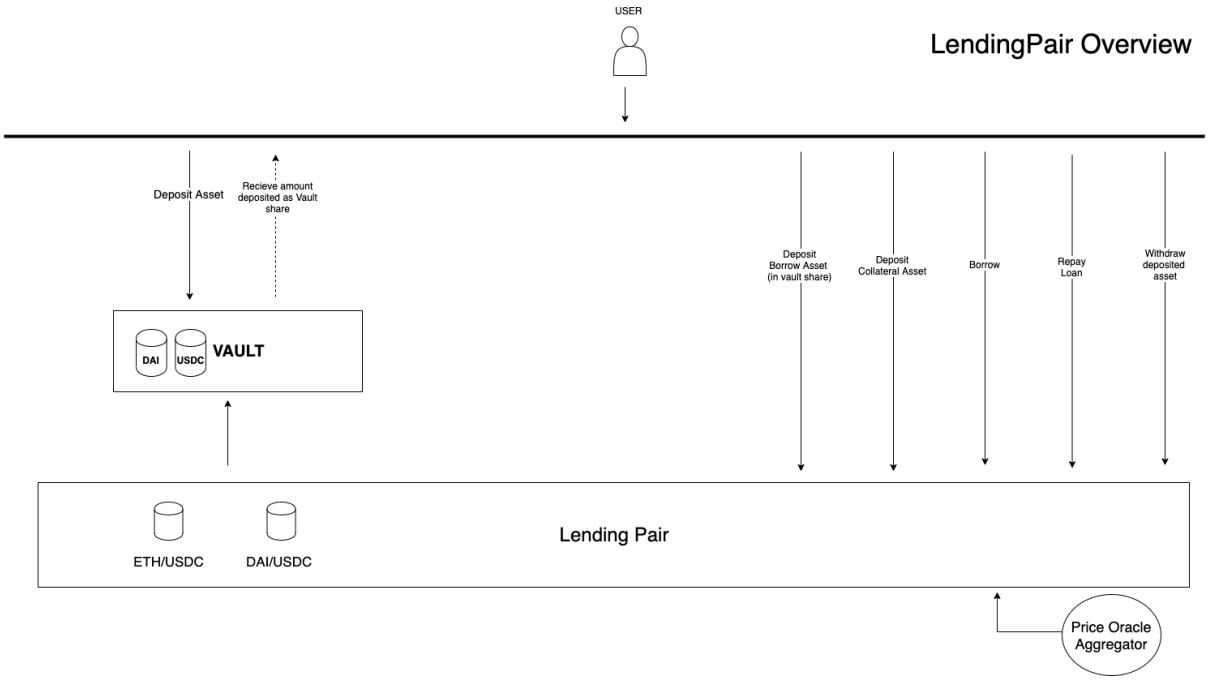
For depositing the collateral asset, the user must again initially deposit into the pair's vault and then whitelist the lending pair they want to use into the vault to enable it to transfer. The user next calls the depositCollateral function on the lending pair once they have whitelisted the contract on the vault (whitelisting the contract only needs to happen once). The lending pair will then transfer from the user's account into itself and mint the user a WrappedCollateralAsset token in a 1:1 ratio. Again, the user specifies the amount to deposit in the vault in terms of vault shares.

For borrowing from a lending pool, the user first specifies the amount of borrow tokens desired. The borrow function checks if the user has enough collateral to cover the borrow position and there is enough liquidity in the protocol. It converts the amount being borrowed to vault shares then transfers it to the user. The borrow obligation is represented in the amount of borrow token and not shares. A debt token will be minted in an amount representing the amount of debt owed.

For repayment, the user specifies the amount of the borrow position they created that they want to repay, and then are able to repay their borrowed amount.

For liquidation, the liquidate function enables another user to liquidate an underwater borrow position. When liquidation within the lending pair occurs, the protocol takes a share of the liquidation fees (with the exact value to be determined).

These different capabilities of the lending pair are depicted as follows:



Methods related to the lending pair are:

- depositBorrowAsset
- depositCollateralAsset
- borrow
- repay
- liquidate

View methods related to the lending pair are:

- name
- symbol

Vault

Warp's vaults store the underlying two assets for each lending pair. Vaults enable flash loans on assets held in the vault, and conform to the ERC-3156 token standard. These vaults are upgradable, meaning that Warp can continue to improve upon their structure.

The first step in the process of interacting with the vault is the depositing by a user of any asset (either one of the two assets in an existing lending pair, or an asset they want to input into a new lending pair). The user will then obtain a specific amount of vault shares representing ownership of their deposited tokens. These shares will be calculated utilizing the following formula:

share = (_amount * currentTotal) / currentUnderlyingBalance

Where:

- share = the number of vault shares the user receives
- _amount = amount of a particular asset that the user deposits
- currentTotal = amount of shares already created for this vault
- currentUnderlyingBalance = amount of the particular deposited asset already in the vault

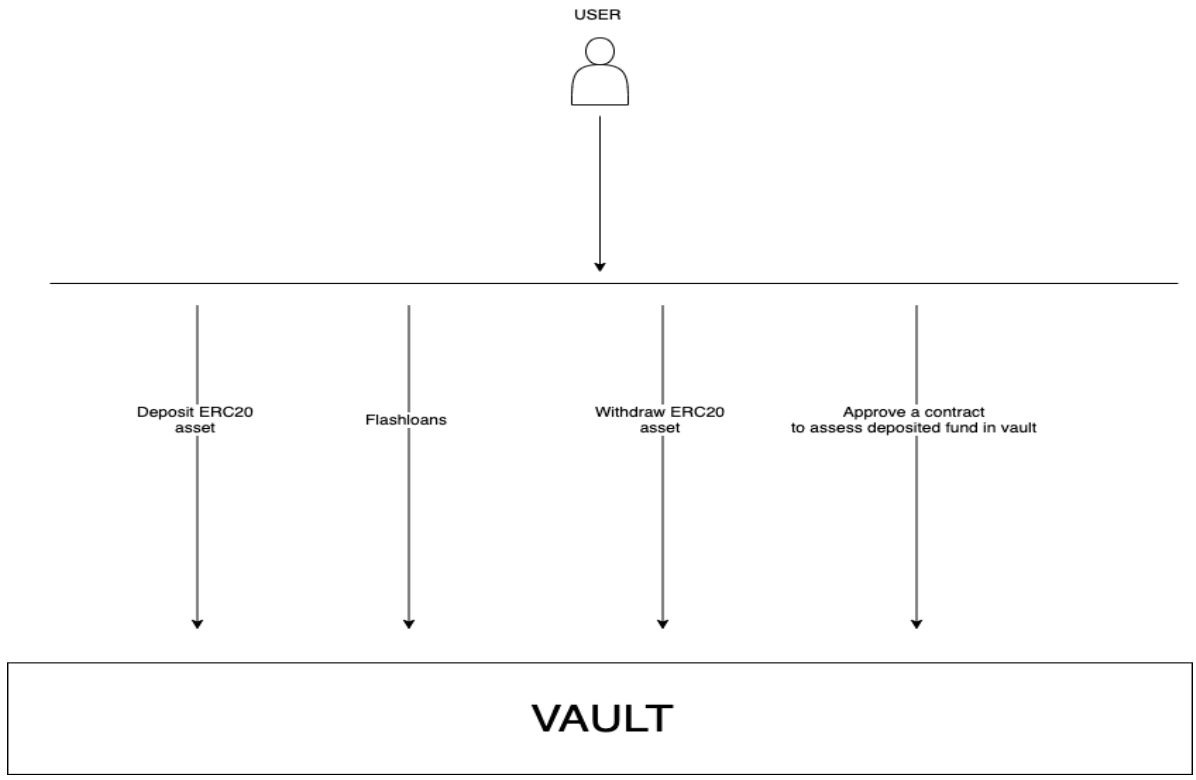
The user is able to withdraw their underlying token by specifying the amount they would like to withdraw, as represented in a certain number of vault shares in the pool.

Flash loans are also facilitated by vaults; a FlashBorrower contract can enable flash loans on assets held in the vault. Upon repayment, users must then pay the associated flash loan fee.

An additional utility of Warp's vaults is for users to approve/whitelist a contract to withdraw shares from their account. This is facilitated with a signed message, which gives approval for the contract to spend their funds in the vault.

The Warp Vault is depicted below, whereby the user can deposit or withdraw ERC20 assets into/from the vault, utilize flashloans via the vault, or approve a contract to assess deposited funds in the vault:

VAULT Overview



Functions related to the vault are:

- Deposit
- approveContract
- Withdraw
- flashloan

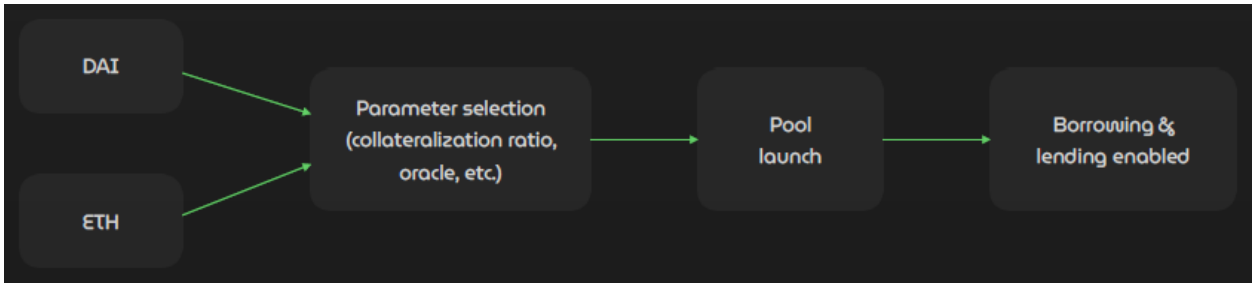
View methods related to the vault are:

- name
- symbol
- version

Methods

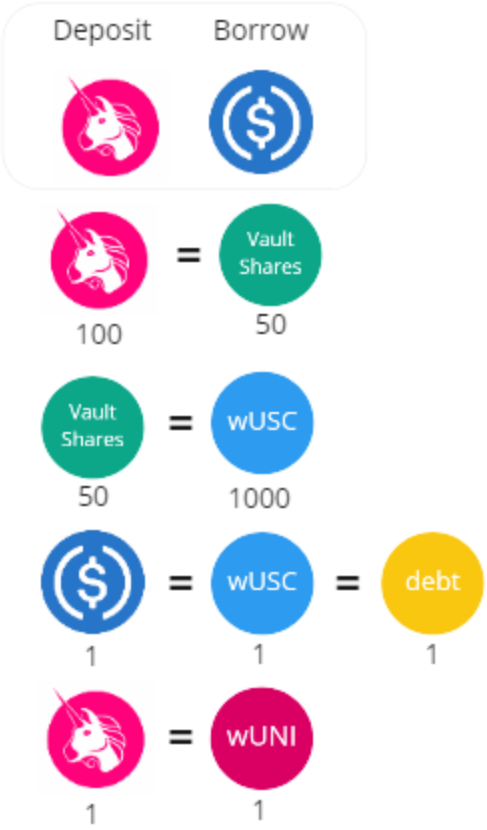
Example

In the example of an isolated lending pair between DAI and ETH, where ETH is the collateral and DAI is the borrow asset, the pool creator selects the pool's parameters, such as the collateralization ratio, fees, reserve factor, interest rate model, etc. The pair then launches, enabling the borrowing and lending of DAI using ETH as collateral.



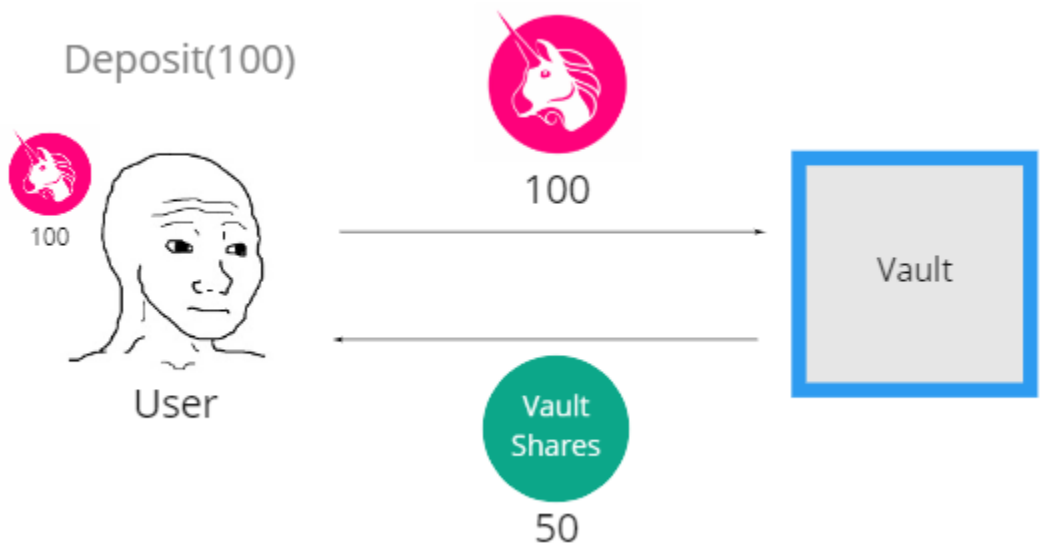
Key

These icons represent a cryptocurrency, Uniswap LP tokens, wUNI tokens, wUSC tokens, debt tokens, and vault shares, in order. The relationship between these tokens (and shares) are as follows, with additional methods depicted using these icons and coding in the following sections.



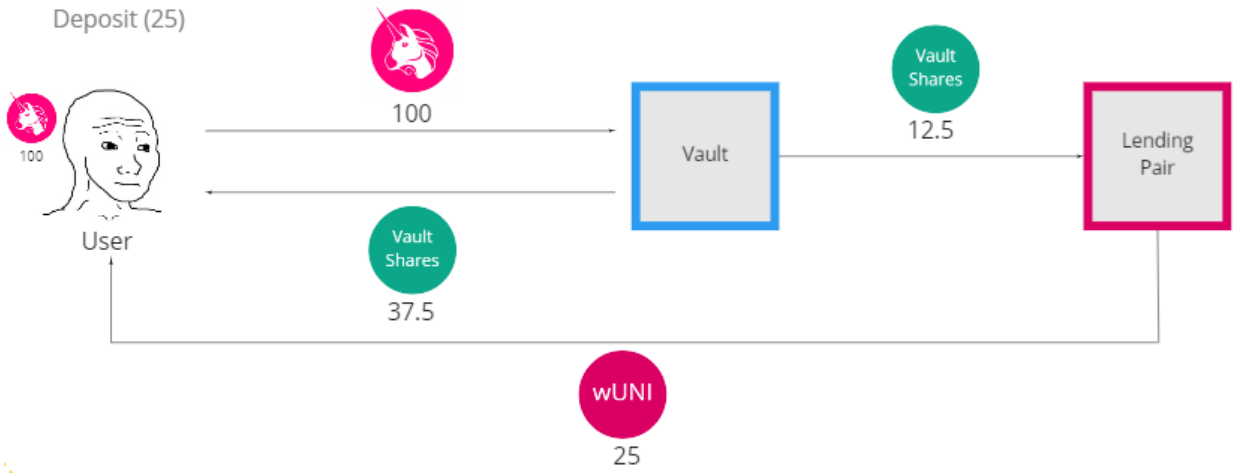
Deposit

DepositToVault (amountToDeposit):



```
/// @notice Deposit an amount of `token`
/// @param _token The ERC-20 token to deposit.
/// @param _from which account to pull the tokens.
/// @param _to which account to push the tokens.
/// @param _amount Token amount in native representation to deposit.
/// @return amountOut The deposit amount in vault shares
function deposit(
    IERC20 _token,
    address _from,
    address _to,
    uint256 _amount
) external override whenNotPaused allowed(_from) returns (uint256 amountOut) {
    // Checks
```

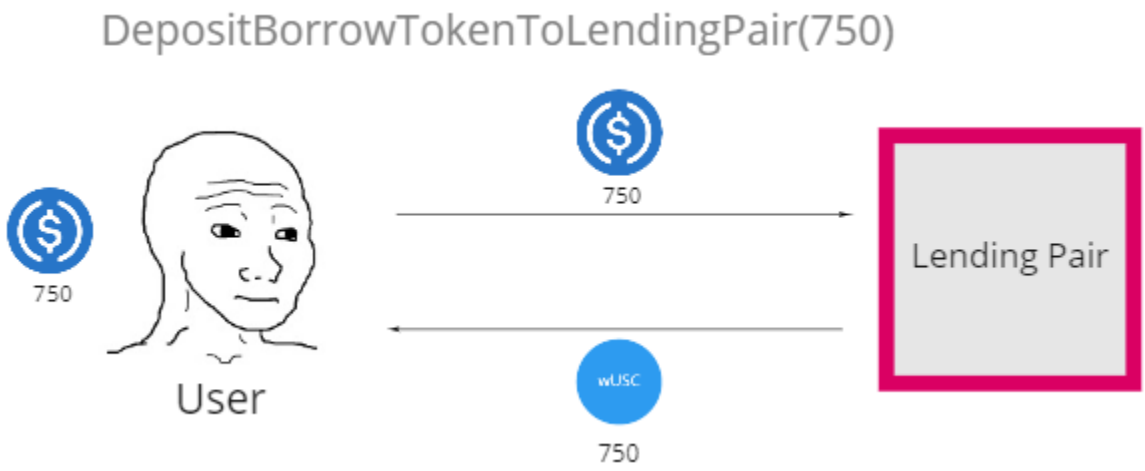
DepositCollateralToLendingPair (amountToDeposit)




```
/// @notice Deposit an amount of `token`
/// @param _token The ERC-20 token to deposit.
/// @param _from which account to pull the tokens.
/// @param _to which account to push the tokens.
/// @param _amount Token amount in native representation to deposit.
/// @return amountOut The deposit amount in vault shares
function deposit(
    IERC20 _token,
    address _from,
    address _to,
    uint256 _amount
) external override whenNotPaused allowed(_from) returns (uint256 amountOut) {
    // Checks
```

```
/// @notice deposit allows a user to deposit underlying collateral from vault
/// @param _tokenRecipient address to credit the wrapped collateral shares
/// @param _vaultShareAmount is the amount of user vault shares being collateralized
function depositCollateral(address _tokenRecipient, uint256 _vaultShareAmount)
    external
    override
    whenNotPaused(Actions.Deposit)
{
```

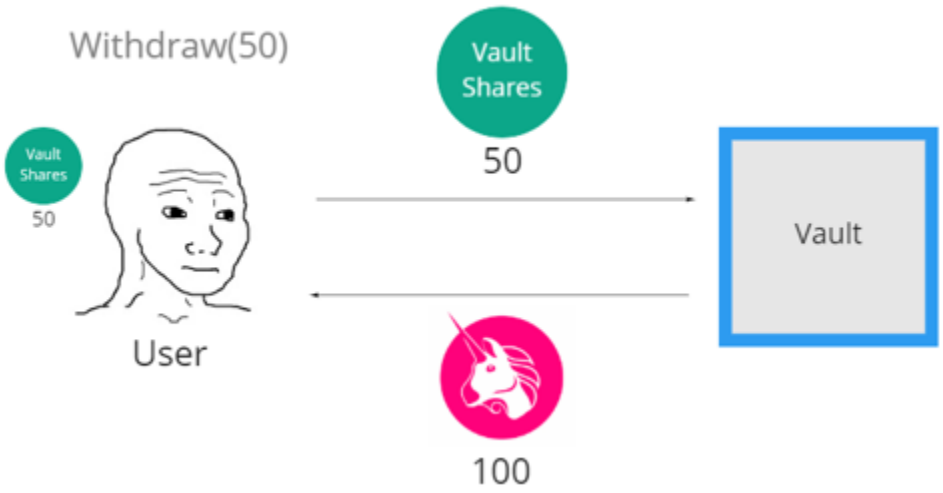
DepositBorrowTokenToLendingPair (amountToDeposit)




```
/// @dev the user should initially have deposited in the vault
/// transfer appropriate amount of underlying from msg.sender to the LendingPair
/// @param _tokenReceipeint whom to credit the wrapped tokens
function depositBorrowAsset(address _tokenReceipeint, uint256 _vaultShareAmount)
    external
    override
    whenNotPaused(Actions.Deposit)
{
    require(_tokenReceipeint != address(0), "IDB");
```

Withdraw

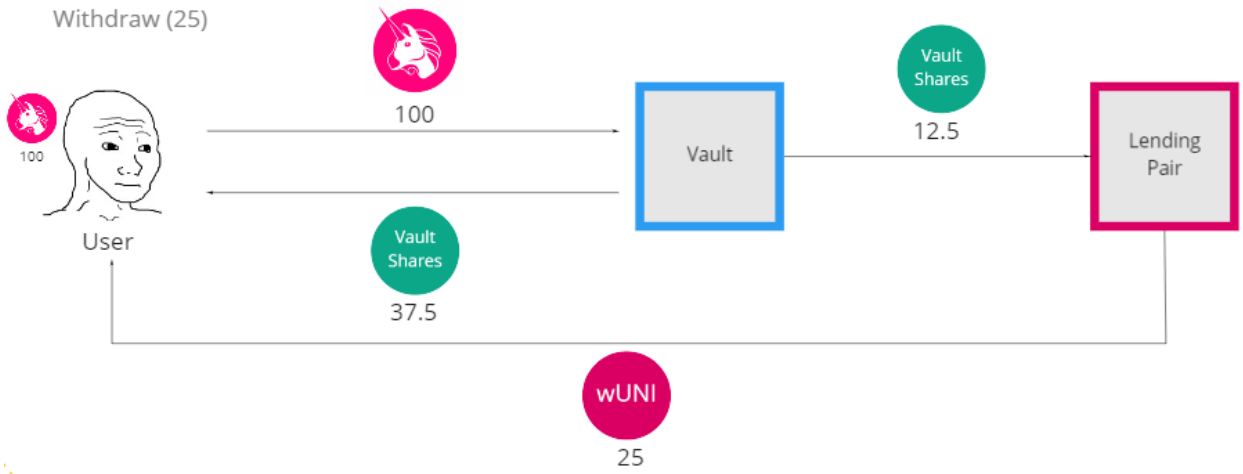
Withdraw (amountOfSharesToWithdraw)




```
function withdraw(
    IERC20 _token,
    address _from,
    address _to,
    uint256 _shares
) external override whenNotPaused allowed(_from) returns (uint256 amountOut) {
```

```
    function withdrawCollateral(uint256 _amount) external {
        uint256 amount;
```

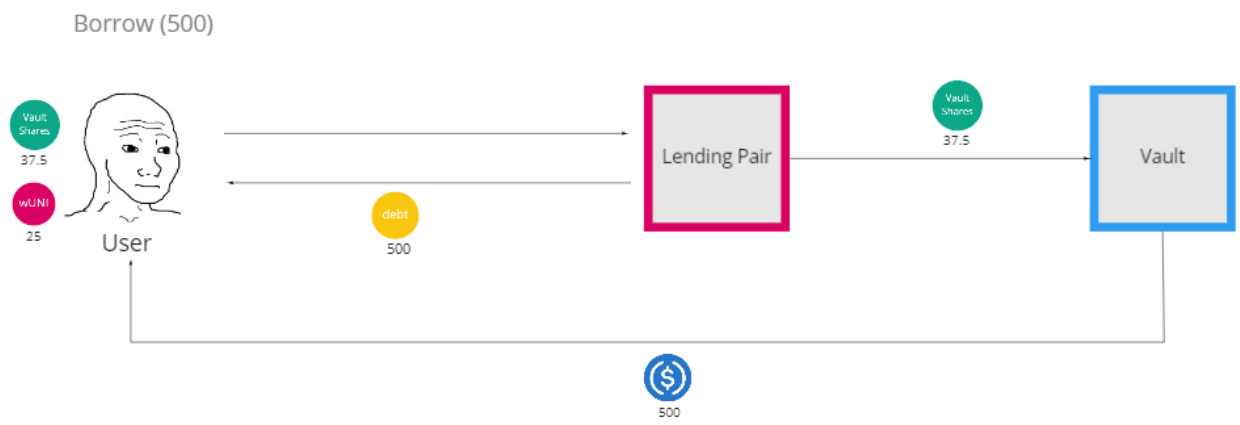
WithdrawCollateralFromLendingPair (amountToDeposit)




```solidity
function withdrawCollateral(uint256 _amount) external {
    uint256 amount;

    uint256 maxAmount = getMaxWithdrawAllowed(msg.sender);

    if (_amount == 0) {
        amount = maxAmount;
    } else {
        amount = _amount;
    }

    // require the availible value of the collateral locked in this contract
    // is greater than or equal to the amount being withdrawn
    require(maxAmount >= amount, "EXCEEDS_ALLOWED");
    // subtract withdrawn amount from amount stored
    // reverts if the user doesn't have enough balance
    wrappedCollateralAsset.burn(msg.sender, amount);
    // transfer them their token
    vault.transfer(collateralAsset, address(this), msg.sender, amount);
    emit WithdrawCollateral(msg.sender, amount);
}
```

Borrow

Borrow (amountOfBorrowTokenToBorrow)




```
/// @param _amountToBorrow is the amount of the borrow asset vault shares the user wants to borrow
/// @param _debtOwner this should be the msg.sender or address that delegates credit to the msg.sender
/// @dev we use normalized amounts to calculate the
function borrow(uint256 _amountToBorrow, address _debtOwner) external whenNotPaused(Actions.Borrow) {
```

DelegateBorrow (addressToDelegateTo, amountToDelegate)

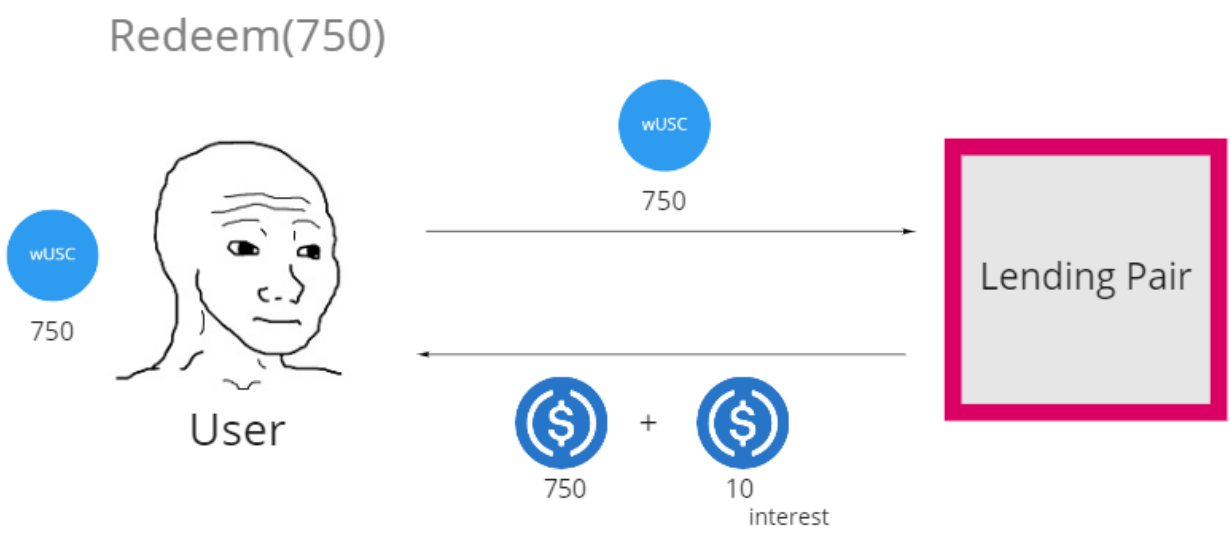
```
function delegateBorrowWithSignedMessage(
    address _from,
    address _to,
    uint256 _amount,
    uint8 v,
    bytes32 r,
    bytes32 s
) external {
    require(_to != address(0), "INVALID_TO");
```

OR:

```
function delegateBorrow(address _to, uint256 _amount) external {
    _delegateBorrowInternal(msg.sender, _to, _amount);
}
```

Redeem

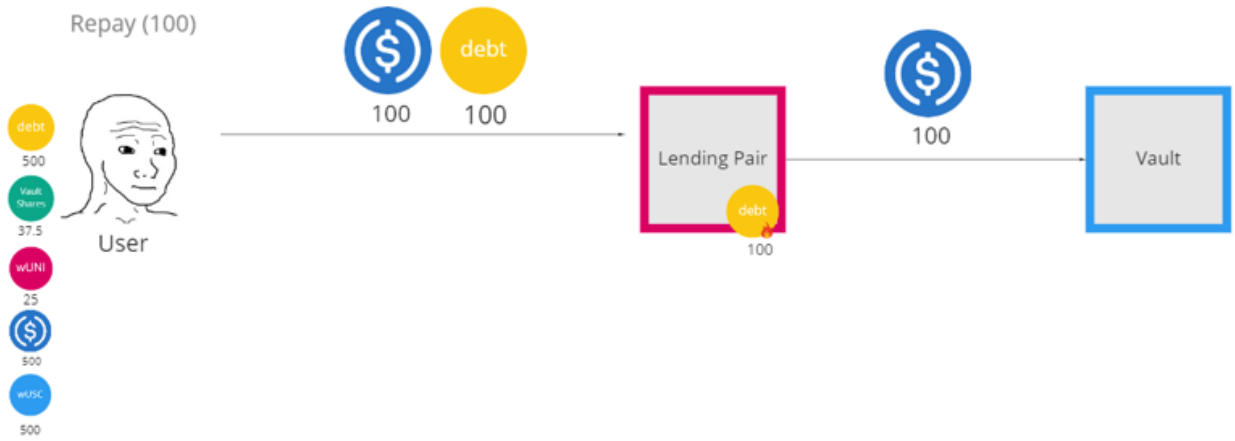
Redeem (amountToRedeem)




```
/// @notice Allows a user to redeem their Wrapper Token for the appropriate amount of underlying asset
/// @param _to Address to send the underlying tokens to
/// @param _amount of wrapper token to redeem
function redeem(address _to, uint256 _amount) external override {
```

Repay

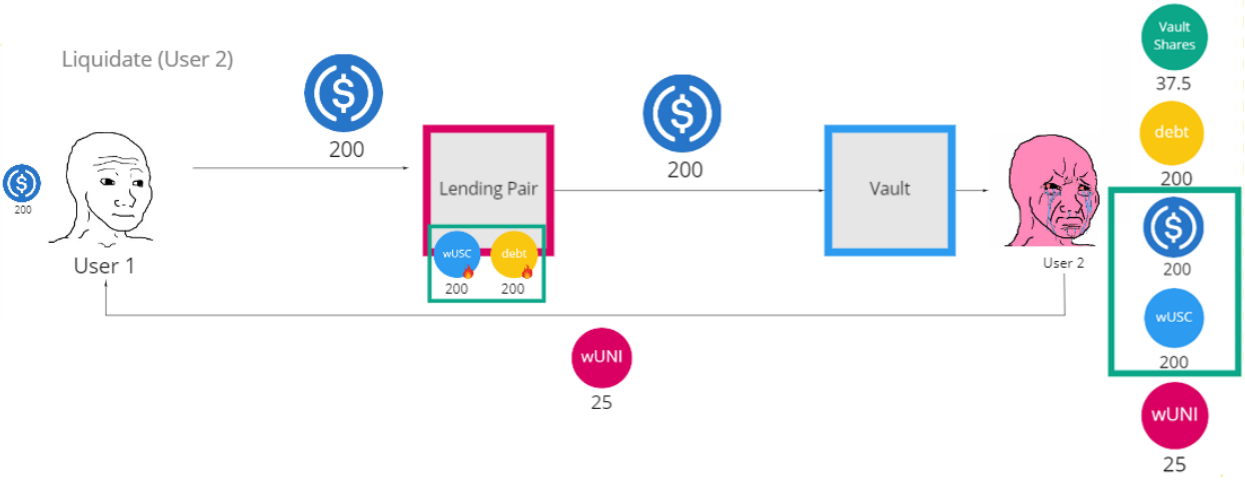
Repay (amountInUSDCtoRepay)




```
/// @notice Sender repays their own borrow
/// @param _repayAmount The amount of borrow asset to repay
/// @param _beneficiary address to repay loan position
function repay(uint256 _repayAmount, address _beneficiary) public {
```

Liquidate

Liquidate(address)




```
function liquidate(address _borrower) external {
    // require the liquidator is not also the borrower
```

Addresses Provider

Not sure what applies from this link

Addresses Provider Registry

Not sure what applies from this link

Protocol Data Provider

Not sure what applies from this link

Warp Tokens (wTokens)

In the Warp Protocol, there are three wTokens:

- Collateral Wrapper Token
- Borrow Wrapper Token (the interest bearing token)
- Debt Token

Collateral Wrapper Token

The receipt token for the collateral asset is used to represent the amount of share of the total collateral asset the user owns. These Collateral Wrapper Tokens are minted when a user deposits the collateral asset. It conforms to the ERC20 token interface. It doesn't accrue interest.

Not sure what else applies from this link.

Borrow Wrapper Token

The receipt token for the borrow asset is used to represent the amount of share of the total borrow asset the user owns. These Borrow Wrapper Tokens are minted when a user deposits the borrow asset. It conforms to the ERC20 token interface. It accrues interest.

Not sure what else applies from this link.

Debt Token

A debt token is also utilized to represent the amount of debt the user has in the system. Debt tokens are tokens that are minted and burned on borrow and repay, representing the debt owed by the token holder. balanceOf() will always return the most up to date accumulated debt of the user. They are not transferable.

Not sure what else applies from this link

Price Oracle

This is the price oracle aggregator responsible for providing the lending pair asset price.

Methods relating to the price oracle include:

- getPriceInUSD
- viewPriceInUSD

Not sure what else applies from this link

Interest Rate Model

An important characteristic of our lending pairs is our Configurable Interest Rate Model. It uses an interest rate formula similar to Compound Finance's JumpInterestRateModel. Within the Warp V2 isolated lending pools, annual percentage yield (APY) is calculated as follows:

- Add APY calculation

Uniswap V3 LP Compatibility

Warp V2's launch is coordinated with the launch of Uniswap V3 in May, 2021.

Warp V1 already accepts LP tokens from Uniswap V2 to collateralize loans on its platform. However, a major change is coming with Uniswap V3: LP tokens will now be non-fungible tokens (NFTs). Warp is staying ahead of this update in order to continue seamless functionality with Uniswap LPs as they transition to V3, and has built compatibility with this new version of tokens. This new coding has been audited, ensuring it was ready for Uniswap V3 launch. That way, users continue to be able to use LP tokens to collateralize loans with Warp, uninterrupted.

Cross-Layer, Fully Collateralized Loans

The Problem with L2

Layer 2 technology is increasingly being recognized as the future of the blockchain and DeFi industries. In recent months, many large public blockchains have been overloaded with transactional data, resulting in slowdowns and high gas fees. As a result, a number of protocols and chains have turned to layer 2 for solutions. Layer 2 acts as a second layer over the main blockchain, operating in tandem but enabling computations to be performed in this new location, decreasing the burden on the main chain. These methods resolve scalability issues that are straining many prominent public blockchains, such as the Ethereum chain that is at the core of the DeFi industry.

As a result, layer 2 tools are the hottest new technology. Layer 2 has been such a successful solution that even Vitalik Buterin, founder of Ethereum, has said that Ethereum is "all-in on rollups" to fix these pressing problems. The most promising layer 2 solutions right now are 'rollups' of various kinds. Rollups bundle multiple transactions on a separate chain together, prove their validity, and submit only the proof to the main chain. This cuts down on the individual verification time and while still maintaining the same degree of security.

The two main types of rollups are optimistic and zero knowledge (ZK) rollups, each of which use a different approach to verification and transaction bundling. There is a lot of hype surrounding the company Optimism's rollups, with a few big decentralized applications (DApps) rolling out testnets of these tools. For example, decentralized exchange (DEX) leader Uniswap has announced that their version 3, coming out later this year, will be on Optimistic rollups. Uniswap is not the only one – Synthetix has also already rolled out a testnet with Optimism, which has gone very smoothly. It is clear that users are excited about a layer 2 Uniswap—just look at their UNI token price, which soared more than 40% in recent weeks, catapulting UNI to become the only DeFi protocol token to reach the top 10 tokens.

Despite the potential of layer 2 technology, this shift to a new layer is still in its early stages. Warp intends to be on the forefront of this transition, and has identified the movement of assets between layer 1 and layer 2 as a present pain point that it is well-positioned to address.

At present, layer 1 and layer 2 are still largely disparate. As these layers are distinct, layer 1 assets are not interchangeable for layer 2 assets, and vice versa. Therefore, it has been incredibly challenging to efficiently facilitate transfers of assets between layers. With Optimism, transfers from layer 1 to layer 2 can be quick, but transfers from layer 2 to layer 1 can still take a week or two. Withdrawing funds from Optimism is time-consuming because the rollup requires the finalization of the verification process for transactions to be completed in advance. These delays can be both annoying and financially damaging; the DeFi industry is incredibly fast-moving, with new projects and functionalities popping up every day, and with token prices often being volatile. Thus, users need flexibility with their funds, in order to generate the maximum value and protect against losses.

Enabling Efficient Value Transfer Across Layers 1 and 2

Warp is presently designing a solution to this issue without compromising on security. We have built a lending solution that allows users to deposit layer 1 or 2 assets and borrow assets along the other layer. We retain the advanced security and verification of present solutions, but the lengthy transaction times are completely avoided.

Warp's cross-layer fully collateralized loans let users seamlessly participate in both layers of blockchain without constantly having to shuffle assets back and forth. A huge benefit of this infrastructure is that Warp users will be able to continue to gain value on their layer 2 assets, while using lending to have immediate access to layer 1. Essentially, Warp's solution frees up assets that would have previously been relegated to one layer only.

Layer 2 is clearly the future of DeFi. We are all in on Optimism's rollup model and feel that it can be harnessed to make layer 1 and 2 compatibility a reality. Some of the benefits of Optimism include ease of transferring existing DApps to layer 2. The OVM (Optimism Virtual Machine) allows for the same smart contract capabilities as the Ethereum main chain and requires very few changes for developers to make layer 2 a reality. With the full roll out of this technology happening soon, we expect to see DeFi become increasingly centered on layer 2.

Here at Warp, we want to be setting the pace rather than playing catch-up, and therefore are enabling cross-layer asset swapping in anticipation of the layer 2 boom. Layer 2 presents new opportunities for DeFi, and efficient value transfer between layers via the Warp Protocol is the first step towards an influx of fast, cheap, secure protocols.

Partnerships for Accepting New LP Tokens & Other Functionalities

Unslashed Finance

Warp Finance is excited to report on the establishment of a new partnership with Unslashed Finance. Unslashed Finance offers a variety of crypto-related insurance projects for the DeFi field. This includes the Spartan Bucket, a mechanism whereby users deposit Ether in order to supply insurance coverage to a variety of pools and policies, receiving a receipt token to represent this deposit and the yield earned for providing insurance. Warp will now be accepting these receipt tokens as collateral on this platform, enabling users to maximize capital efficiency by having access to funds while being invested into the Spartan Bucket.

What is Unslashed Finance?

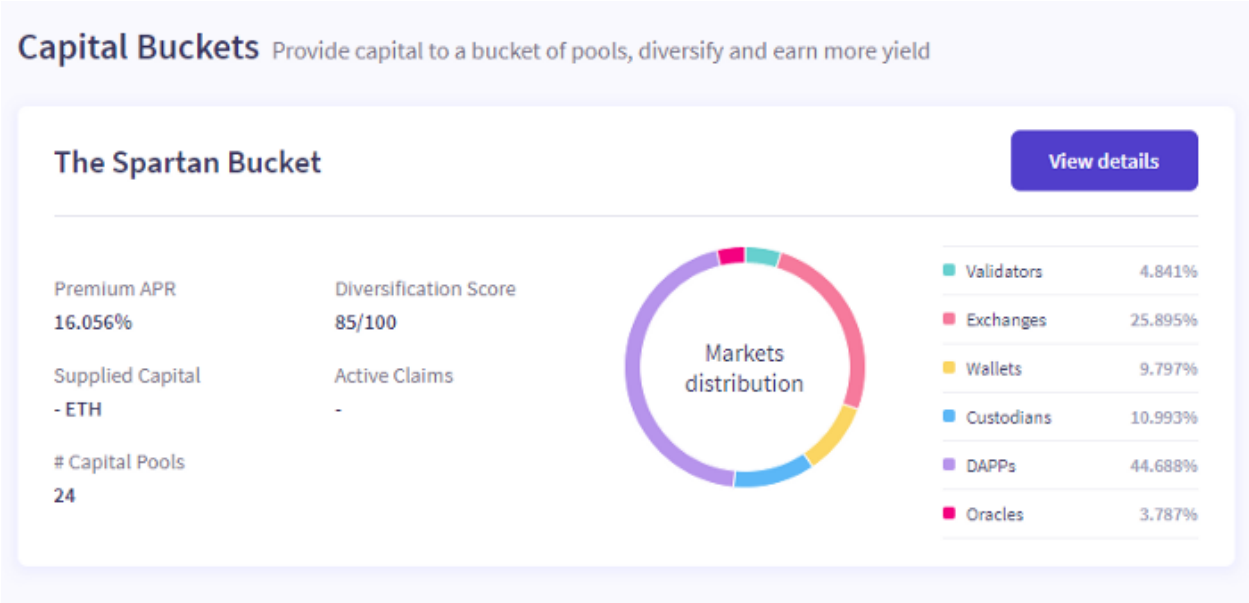
Unslashed Finance is an innovative DeFi insurance protocol. On one end of this protocol, users pay to have their assets insured. On the other end, users fund the insurance coverage by depositing Ether (ETH), which provides them with a yield (generated by the payments of the insurees). In the DeFi field, getting insurance on assets can be incredibly important, such as to protect against crypto theft, technical glitches, price volatility, and human error.

While a multitude of DeFi insurance protocols exist, Unslashed Finance offers an array of benefits above and beyond these other options. Unslashed is committed to technological excellence and the balancing of risk, optimizing the balance between hedging some risks while

getting exposures to others. Unslashed uses “Buckets” to allow capital suppliers to provide coverage for a multitude of pools/policies, not just one. This ensures that Unslashed capital suppliers have a more diversified position, and have the opportunity to earn more yield.

What is the Spartan Bucket?

Unslashed Finance’s Spartan Bucket offers its own unique benefits. This Bucket contains several coverage pools, incorporating a variety of products and risks with a weighted balance. The Spartan Bucket was the first structured insurance product listed on Unslashed. It is optimized to be both low-risk and high diversity. It involves 6 centralized exchanges, 2 wallets, 8 DApps, 1 oracle, 1 validator, 3 custodians, and 4 peg loss-related protections. The Spartan Pool is pictured below:



What does this partnership entail?

The partnership between Unslashed and Warp involves Warp accepting receipt tokens generated from The Spartan Bucket participation as collateral for loans on its platform. Obtaining loans in ETH results in an effective leveraged position, which Warp Finance plans on supporting. In this manner, users will be able to benefit from providing insurance coverage to other protocols within the Spartan Bucket, while being able to continue to use their capital in the meantime via a loan through Warp. This partnership is therefore mutually beneficial to Warp, Unslashed, and the platforms’ users, as it provides additional value generating opportunities to Unslashed users (thus incentivizing participation), and brings a new user base to Warp.

Element Finance

Element Finance offers various prominent cryptocurrencies at a discount, unlocking high fixed yield income in DeFi. Principal Tokens (PTs) represent a user's stake and yields in Element's various pools, and will now be accepted by Warp as collateral for loans on its platform.

What is Element Finance?

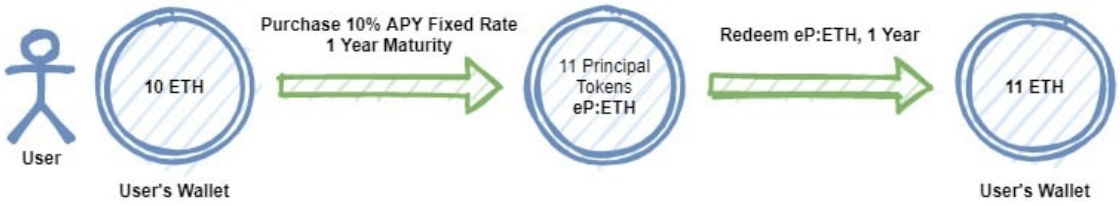
Element Finance was created to deliver high fixed yield income into the DeFi market, particularly for ETH, BTC, USDC, and DAI. At present, the variable yield market in DeFi can be overly complex, full of constantly fluctuating price rates, high fees, and the need to constantly shift/adjust deposits to meet goals. Element utilizes fixed rate yield to resolve these issues in a manner superior to competitors in the space.

Through Element, the aforementioned four digital assets can be purchased at a discount without a fixed term, meaning that both the discounted and the base assets can be exchanged any time. Thus, the fixed rate income can be secured with the exchange of any major base asset. This allows users to leverage or increase exposure to yield without any liquidation risk.

The benefit of this protocol is primarily improved capital efficiency; users are able to gain more out of the yield positions that they are already depositing into, such as any yield farming or staking protocol.

What are Principal Tokens?

Principal Tokens, or PTs, are a receipt token from the Element Finance platform. These tokens represent the principal of a yield generating position, with the protocol's Yield token (YT) representing the yield on this position. PTs allow users to sell their principal at a discount, resulting in the creation of a marketplace for fixed income rate positions. In this manner, their principal is no longer locked up, and they can gain leverage on by participating in further yield-generating processes. At maturity, PTs are redeemable in a 1:1 ratio for the underlying asset. Element Finance provides the following example use case for PTs:



What does this partnership entail?

Warp will accept PTs as collateral for stablecoin loans on its platform. This provides Element Finance with yet another opportunity for using their principal to participate in yield-bearing activities. Moreover, this enables PT holders to gain even further leverage on their digital assets with a Warp loan. The present partnership also enables Warp and Element to share in each others' user bases, providing incentive for participating on both platforms via this novel utility.

Benchmark Protocol

Warp Finance will be accepting Benchmarks's The Standard (xMARK) token as collateral. This allows users to optimize functionality and capital efficiency, being able to simultaneously participate in the Benchmark and Warp platforms.

What is the Benchmark Protocol?

The Benchmark Protocol is built around the MARK token, its supply elastic stablecoin alternative that connects traditional capital markets to DeFi. This protocol is a rules-based utility which is able to adjust the MARK token supply automatically in proportion to (1) the CBOE volatility index (VIX), and (2) deviation from the target metric, which is one Special Drawing Rights (SDR) unit. Specifically, increases in the VIX induce increases in the MARK token supply, therefore reducing the impact of liquidity-related events. Further, the SDR is the world's most stable currency, making for a stable peg for the MARK token.

Effectively, the MARK token gives exposure to far more than just one currency. In fact, it is entirely unrelated to crypto market price movements. Instead, it provides delineated exposure to markets across the globe. As a result of this infrastructure, the Benchmark Protocol is able to mitigate liquidation events and hedge risk. Further, this broader reach appeals to a wider user base.

What is the xMARK token?

Single asset staking of the MARK token in the Benchmark Protocol produces a receipt token called The Standard (xMARK) token. xMARK tokens are issued in a similar manner to Uniswap LP tokens, and also similarly represent an individual's share in an overall staking pool. xMARK tokens can be swapped back for staked MARK at any point, again like traditional LPs. An added benefit of xMARK tokens comes from the fact that these tokens represent a share of MARK that is in the token pool affected by rebasements, while xMARK is not impacted by rebasements. As a result, the Benchmark Protocol can expose MARK to conventional platforms which are incompatible with elastic-supply currencies. xMARK tokens also act as a governance token, helping the protocol realize a decentralized on-chain governance system. Initially, this will involve token-weighted voting.

What does this partnership entail?

The partnership between Benchmark and Warp involves Warp accepting xMARK tokens as collateral for loans on its platform. In this manner, users will be able to benefit from the hedging and low risk of liquidity related events associated with the Benchmark Protocol, while being able to maintain access to their capital with a loan from Warp. In addition to allowing users to simultaneously and optimally benefit from both these platforms, another benefit of this partnership is the new user base delivered to both Warp and the Benchmark Protocol. Further, the Warp platform adds another receipt token to its growing list of accepted collateral, improving financial flexibility for its users.

Archer DAO

This partnership will facilitate the liquidation of noncompliant loans from the Warp Protocol utilizing the Archer DAO Protocol, ensuring that these loans do not have negative impacts on the overall Warp ecosystem.

What is Archer DAO?

Archer DAO is a protocol enabling miners and block producers to earn additional revenue through various means, including loan liquidation.

This Ethereum-based protocol introduces a valuable new revenue stream to these blockchain participants by executing profitable on-chain opportunities in a sustainable manner. While

miners have traditionally been able to receive revenue from block rewards, this value is not guaranteed. It was first cut in 2016, and in August 2020, Ethereum community members proposed a 75% reduction in these rewards. In contrast, the transaction fees earned by miners have been increasing, generating more value than block production.

Archer DAO steps in to help resolve this issue by using on-chain incentive mechanisms to boost miner revenue. This protocol hosts various value-generating opportunities including loan liquidations, decentralized exchange (DEX) arbitrage, and other no- to low-risk value-generating processes. By additionally incentivizing miner and block producer participation, Archer DAO strengthens the overall Ethereum ecosystem and provides a platform for other protocols needing loan liquidation, arbitrage, and other services.

What does this partnership entail?

Warp has established a partnership with Archer DAO for the liquidation of noncompliant loans on its platform. Like more traditional loans, Warp's loans involve a repayment process incorporating the additional repayment of interest. When these predetermined, mutually agreed-upon loan terms are not met, the loan becomes noncompliant and will be liquidated from the Warp Protocol to prevent losses and ensure the unencumbered flow of lending on the platform.

Archer DAO will use its platform to liquidate these noncompliant loans for Warp. Through Archer DAO, miners will be able to generate value by liquidating Warp's noncompliant loans, meaning there is a financial incentive for this process.

As a result of this partnership, noncompliant loans will be liquidated quickly and easily from the Warp Protocol. Thus, Warp will protect against losses due to these noncompliant loans, and will be able to continue to perform its lending process, unhindered.

Warp V2 Audit

Warp Finance's smart contract infrastructure has been audited by renowned security auditing firm, Trail of Bits. This firm identified any shortcomings within the smart contract coding of Warp, and suggested any changes to optimally protect our protocol and our users.

What is Trail of Bits?

While blockchain is the gold standard for data security, there can still be coding weaknesses that make it vulnerable to issues or attacks. Trail of Bits is a preeminent security auditing firm that acts to ensure these sort of shortcomings are identified and resolved. Trail of Bits has been around for nearly 10 years, working to secure some of the world's most popular (and therefore, most targeted) software products and organizations. Trail of Bits provides auditing tools for systems software, blockchain, cryptography, and more, becoming incredibly well respected in these industries.

Trail of Bits utilizes their signature method of auditing, which combines high-end security research with an approach of a real-world code attacker. Trail of Bits uses these tactics and their vast experience to meticulously review smart contracts piece by piece. They then identify any weaknesses or issues, and further provide suggested solutions.

Audit Details

This security audit involved all of Warp's smart contracts, which Trail of Bits provided with a thorough review and any recommendations for changes. Through this audit, we optimally protect our users and our protocol, while ensuring full transparency along the way.